



## Bee All-Stars

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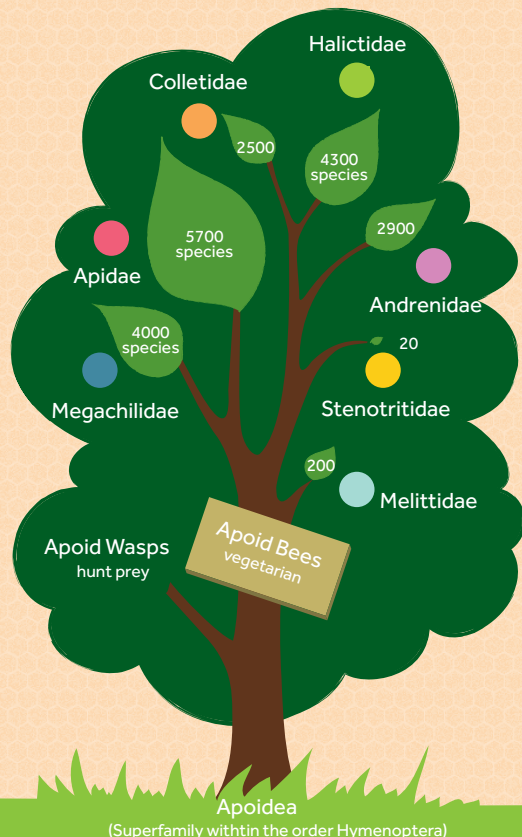
*Foundation: [www.pantarhea.org](http://www.pantarhea.org)*

*For more information about this project and more,*

*please visit [www.greatsunflower.org](http://www.greatsunflower.org)*

### Bee Family Tree

The family colors found in the small circles for each genera also match the color banner on the front of each card.



The following icons will help you get to know each bee better.

#### Foraging



specialists (sp)

#### Pollen Transport



leg

#### Physical Identification



2 submarginal cells (2sm)



3 submarginal cells (3sm)



generalists (gn)



abdomen

#### Flight Seasons



summer



fall



spring



stores internally

#### Nesting



parasite



ground



cavity



parasite - do not store pollen

#### Genus *Agapostemon*

### Physical Characteristics

Males have black / yellow striped abdomen. Females have bright shiny green head, thorax and abdomen, or a black/brown abdomen with white hair bands.

### Food Resources

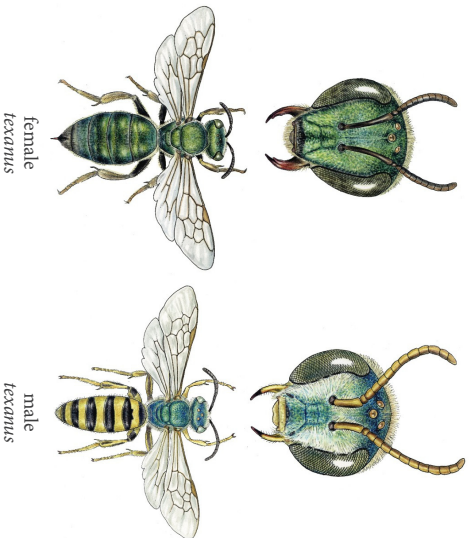
Prefer shallow flowers.

### Nests

Nests in deep vertical burrows in flat or sloping soil, sometimes in banks. Mostly solitary, some nest communally.

### Fun Fact

Only female bees overwinter. All male bees die in the fall.



[greatsunflower.org/agapostemon](http://greatsunflower.org/agapostemon)



40 species in  
worldwide, 14 in  
North America



## Genus *Agapostemon*

(ag-uh-PAHST-eh-mon)

Green Sweat Bee  
Family Halictidae

#### Genus *Hylaeus*

### Physical Characteristics

Slender, hairless, black with bright yellow or white markings on face and legs, more so on males.

### Food Resources

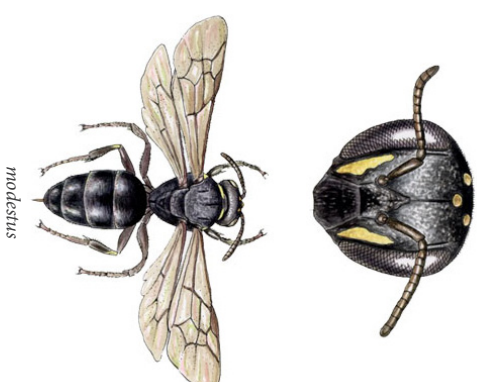
No pollen-carrying scopula. Small body size enables them to access deep flowers.

### Nests

Twig and stem nesters who line brood cells with self-secreted cellophane-like material. Many rely on nest burrows made by other insects.

### Fun Fact

They carry both pollen and nectar internally and regurgitate it upon returning to their nests. Their yellow shaped marks on their faces look like they are wearing a wrestler's mask.



[greatsunflower.org/hylaeus](http://greatsunflower.org/hylaeus)



700 species  
worldwide, 14  
species in North  
America



## Genus *Hylaeus*

(hi-LAY-us)

Yellow-Faced or  
Masked Bees  
Family Colletidae



**Physical Characteristics**

Moderately hairy and slender, with pale bands of hair on abdomen, "heart-shaped" face (eyes slanted toward each other) and "teardrop" shaped abdomen

**Food Resources**

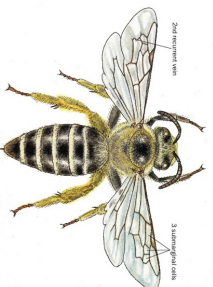
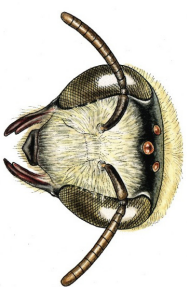
Found on Asteraceae, Papilionaceae, Hydrophyllaceae, Boraginaceae, Malvaceae, Zygophyllaceae & Salicaceae in CA.

**Nests**

Ground nesters in shallow nests (4-6 inches deep.) Sometimes nest in large aggregations.

**Fun Fact**

Females line cells with a natural polymer like, celophane bubbles so her young are well-protected from water as they develop in the soil.

*hyalinus***Physical Characteristics**

Dark brown to black or dark metallic green sheen, with bands of hair on outermost edge of plates on abdomen.

**Food Resources**

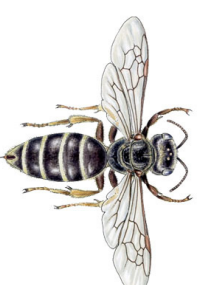
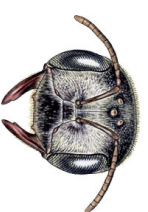
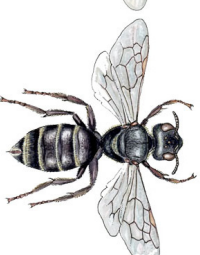
Commonly found on Asteraceae (plants in the Daisy family).

**Nests**

Semi social ground nesters. Some species have small nests with a single queen and a few workers. Other species build long-lived nests with multiple queens and hundreds of workers.

**Fun Fact**

In some *Halictus*, daughters remain in the nest and help care for young. A single nest can be established in spring and continue to be productive until late fall.

*ligatus**tripartitus*

95 species in North America, 330 species worldwide



442 species worldwide, 10 species in North America



# Genus *Colletes*

(koe-LEE-teez)

Polyester or Digger Bees  
Family Colletidae



# Genus *Halictus*

(nah-LICK-tuss)

Sweat Bee  
Family Halictidae



## Genus *Lasioglossum*

### Physical Characteristics

Slender, dusky black to brown, dull green or blue; bands of hair on their abdomen—similar to *Dufourea*, but antenna are higher on face.

### Food Resources

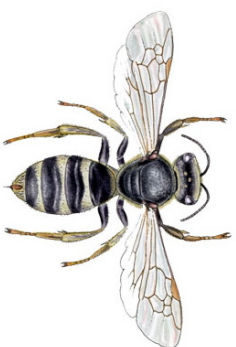
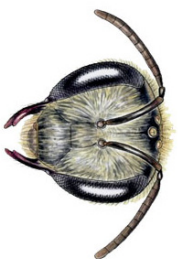
Are both specialists and generalists and attracted to *Oenothera* and *Clarkia*.

### Nests

Ground nesters, can exhibit a full range of social behaviors (both social and solitary). Some species will nest in rotten logs

### Fun Fact

They have glands that produce mix of chemicals called lactones. Each bee has its own unique combination of lactones that it uses to line nests. This helps the bee find its own nest when returning from foraging.



*titusi*



[greatsunflower.org/lasioglossum](http://greatsunflower.org/lasioglossum)



over 1700  
species worldwide,  
280 species in  
North America



## Genus *Lasioglossum*

(LAZE-ee-oh-gloss-um)

Sweat Bee  
Family Halictidae

## Genus *Dufourea*

### Physical Characteristics

Narrow black, dull green, or metallic blue bodies, sometimes with red abdomens, antennae are very low on their face—similar to *Lasioglossum*, but have much lower antennae.

### Food Resources

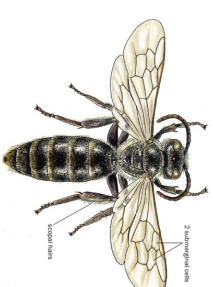
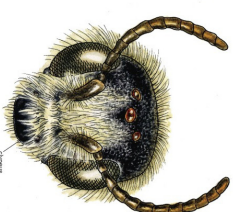
Specialize on a wide variety of different plants including *Liranthus*, *Eschscholzia*, *Clarkia*, *Oenothera*, *Helianthus*, *Campanula*, *Calochortus*, *Monarda*, *Phacelia*, *Mimulus* and various others.

### Nests

Nests can be very shallow in the ground and easily invaded by other bees.

### Fun Fact

The variation of mouth shapes in *Dufourea* species allow for foraging from different size and shaped host plants.



*vernalis*



[greatsunflower.org/dufourea](http://greatsunflower.org/dufourea)



170 species  
worldwide,  
80 species in  
North America



## Genus *Dufourea*

(dew-FOUR-ee)

Sweat Bee  
Family Halictidae



## Genus Sphecodes

### Physical Characteristics

Shiny slender brown to black wasp-like bees, often have red on their abdomen.

### Food Resources

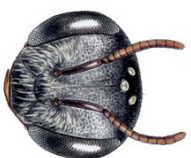
Do not forage for provisions for their offspring because they do not make their own nests.

### Nests:

They are cleptoparasites (nest invaders), and lay their eggs in cells of the other species. Their offspring kill the host larvae and take over the provisions of the host bees.

### Fun Fact

Females have spines on hind legs, ridges and grooves in their exoskeleton to protect them from attack of host bee. Called "cuckoo bees" because their behavior mimics that of cuckoo birds.



*antiochensis*



[greatsunflower.org/sphcodes](http://greatsunflower.org/sphcodes)



300 species worldwide, 80 species in North America



## Genus Sphecodes

(sfe-KO-deze)

Cuckoo Bees  
Family Halictidae

## Genus Andrena

### Physical Characteristics

Black/dull metallic blue or green, some have pale bands of hair on long slender abdomen, velvety facial indentations (fovea) with white to brown hair.

### Food Resources

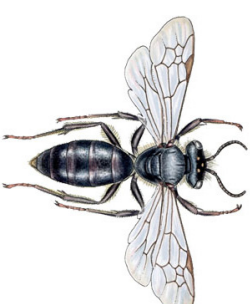
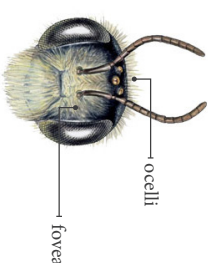
Both generalist and specialists.

### Nests

Mostly solitary ground nesters but sometimes nest communally; two or more females share a nest but build and provision their own nest cells. Prefer sandy soil near or nest under shrubs. Females line cells waxy material.

### Fun Fact

With over 1,300 species, *Andrena* are one of the largest of all bee genera. Females need to gather about half their body weight in pollen to lay their eggs. This can take them 6 - 7 journeys to gather!



*caerulea*



[greatsunflower.org/andrena](http://greatsunflower.org/andrena)



over 1300 species worldwide, 550 in North America



## Genus Andrena

(an-DREE-nuh)

Digger or Miner Bees  
Family Andrenidae



## Genus *Panurginus*

### Physical Characteristics

Jet black, sometimes shiny, with dark colored hairs, moderately hairy, long abdomen.

### Food Resources

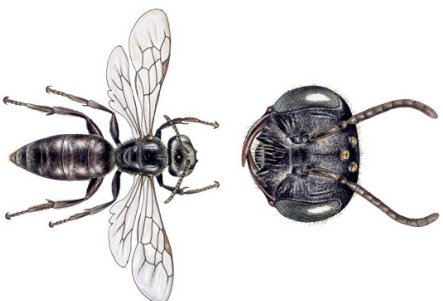
Primarily specialists found on *Ceanothus*, *Nemophila*, *Ranunculus*, though some are generalists.

### Nests

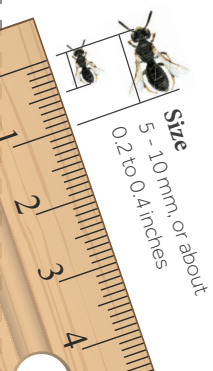
Ground nesters, some species use the same area for nesting year after year and form large aggregations in these areas.

### Fun Fact

Males will patrol the nest area looking for new females to emerge. They can get so excited that they will often form a "mating ball" by having 2-5 males mob a newly emerging female. The female will escape the ball with one male riding on her back.



*nigritinus*



## Genus *Perdita*

### Physical Characteristics

Usually black, but sometimes with metallic green or blue abdominal hair bands. Often have yellow or white markings on face or abdomen, profile of body often seems flat relative to other bees. They are often mistaken for small wasps.

### Food Resources

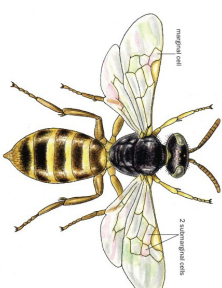
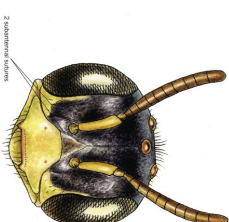
Even though they are specialists, they visit many different flowers for nectar.

### Nests

Mostly solitary ground nesters, but can sometimes be communal.

### Fun Fact

One unique aspect of nests are that the females do not line their brood cells. Instead, they cover the pollen ball with a glandular secretion. When larvae hatch, they then chew through this protective covering to reach the pollen.



*rhysois*



[greatsunflower.org/panurginus](http://greatsunflower.org/panurginus)



47 species  
worldwide, 19 in  
North America



## Genus *Panurginus* (*Pa-nur-gin-us*)

Panurginus  
Family Andrenidae

[greatsunflower.org/perdita](http://greatsunflower.org/perdita)



630 species  
worldwide, most  
in North America



## Genus *Perdita* (*per-DIH-tuh*)

Miner Bees  
Family Andrenidae



## Genus *Dianthidium*

### Physical Characteristics

Black or brown, pale white, yellow or ochre patterns on abdomen, cylindrical body shape, spine or tooth on the tibia of the midleg. Has an arolium between tarsal claws.

### Food Resources

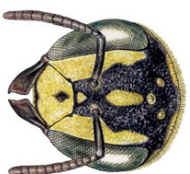
Short-tongued, specialize on Asteraceae (plants in the Daisy family).

### Nests

Some construct nests out of pebbles and resin. Others nest on top of twigs, or in any available burrows. Males are very territorial at nest sites.

### Fun Fact

Collects resin from trees to create waterproof nests from pebbles allowing bees to lay eggs in both protected and unprotected spaces (like a notch of a tree branch).



*pudicum*



## Genus *Anthidium*

### Physical Characteristics

Robust, black, with yellow or white pattern of stripes that is interrupted in the middle of abdomen, abdomen is broad and somewhat flattened, males larger than females, has no arolium between tarsal claws.

### Food Resources

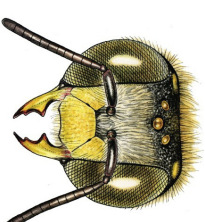
Short-tongued, both generalists and specialists.

### Nests

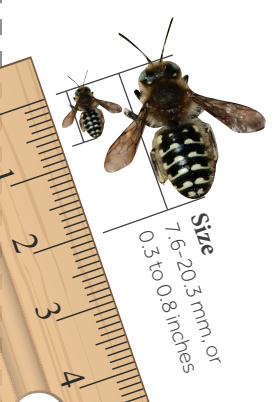
Wool carders nest in a variety of places: old burrows of other insects and bees or key-holes. They line their nests with plant material and seal them with pebbles, wood, plant material and even lizard dung!

### Fun Fact

Called Carder bees because females use the hairs (or "wool") from plants to line their burrows, using their mandibles to "card" the fibers into cell walls.



*mormonum*



[greatsunflower.org/dianthidium](http://greatsunflower.org/dianthidium)



28 species  
worldwide,  
24 species in  
North America

[greatsunflower.org/anthidium](http://greatsunflower.org/anthidium)



170 species  
worldwide, 29 in  
North America



## Genus *Dianthidium* (dle-AN-thid-e-um)

Resin or Mason Bees  
Family Megachilidae



## Genus *Anthidium* (AN-thid-e-um)

Carder Bees  
Family Megachilidae



## Genus *Megachile*

### Physical Characteristics

Smoky colored and wide-bodied. Flattened abdomen with pale hair bands on the integument, females often have huge mandibles used for cutting leaves to build nests.

### Food Resources

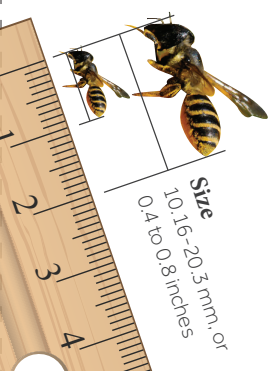
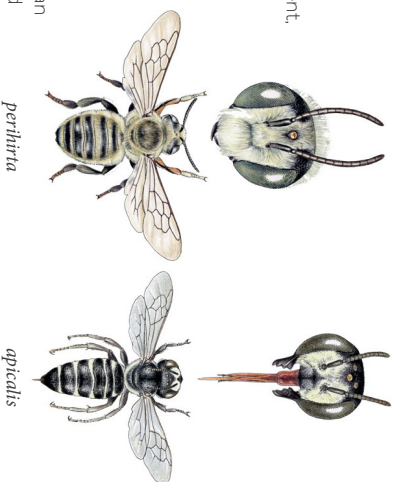
Specialize on flowers or plants from the family Asteraceae.

### Nests

Often cut pieces from leaves or flowers with mandibles and use pieces to form nest cells. Can nest in abandoned beetle tunnels or preformed tunnels in wood or pithy stems.

### Fun Fact

They have been found nesting in garden hoses. Genus includes the largest bee in the world – a Malaysian species with a 2.5" wingspan!



## Genus *Osmia*

### Physical Characteristics

Stout, round, have metallic sheen, shiny green, blue, or even purple color, with broad head and wide abdomen

### Food Resources

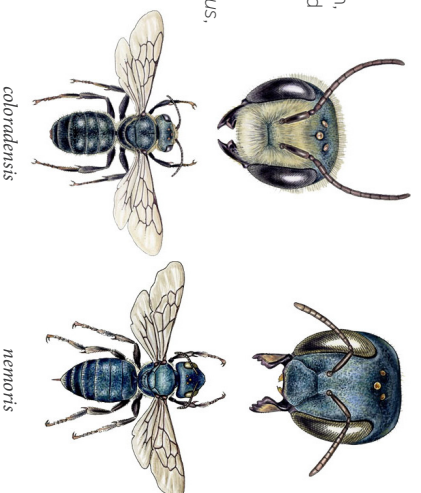
Prefer Rosaceae, fruit trees, Fabaceae, *Mimulus*, *Lotus*, *Placelia* and *Aster* species

### Nests

Solitary nesters in pre-existing holes and artificial sites (wood blocks with holes, paper drinking straws/bamboo). Or collect a variety of materials to construct nests.

### Fun Fact

They are very efficient pollinators. It takes two hives of honey bees (approximately 10,000 to 25,000 bees) to pollinate an acre of fruit trees, but only 250 *Osmia* females for the same task!



[greatsunsunflower.org/megachile](http://greatsunsunflower.org/megachile)



1500 species worldwide, 139 in North America



## Genus *Megachile* (meg-uh-KILE-e)

Large Leaf-Cutter Bees  
Family Megachilidae

[greatsunsunflower.org/osmia](http://greatsunsunflower.org/osmia)



350 species worldwide, 135 species in North America

## Genus *Osmia* (OZ-me-yuh)

Small Leaf-Cutter or Mason Bees  
Family Megachilidae



## Physical Characteristics

Moderately hairy, elongated with hairy eyes, dark brown or black to pale gold with darker stripes on their abdomens.

## Food Resources

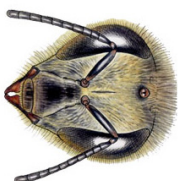
Used all over the world for a variety of crops.

## Nests

Communal nesters in large cavities above or below ground such as rock crevices, tree holes, walls of buildings and managed hives. Workers build multi-celled honey combs of wax. Queen lays a single egg in a cell.

## Fun Fact

Larvae that are fed a special diet of royal jelly become queens. A single hive can house 20,000-30,000 bees in winter and 60,000-80,000 bees in summer. Female queens can live up to 5 years!



*mellifera*



## Physical Characteristics

Long, shiny, hairless bees, black, dark blue or dark green with yellow or white markings on their face. Females often have a yellow bar on front of face below antennae. Closely related to *Xylocopa* but much smaller and flatter.

## Food Resources

Are found on a wide variety of plant species

## Nests

Make their own tunnels in wood or pith of plants like elderberry, box elder and sumac. Females will overwinter as adults in excavated stems and modify this nest to lay her brood.

## Fun Fact

Found on all continents except Antarctica! There are parthenogenic females that can produce offspring without mating.



*acantha*



[greatsunflower.org/apis](http://greatsunflower.org/apis)



7 species worldwide, 1 species in North America



## Genus *Apis*

(A-pus)

European or Western Honey Bees  
Family Apidae

[greatsunflower.org/ceratina](http://greatsunflower.org/ceratina)



351 species worldwide, 21 species in North America



## Genus *Ceratina*

(sera-TLE-na)

Small Carpenter Bees  
Family Apidae



*Genus Triepeolus*

**Physical Characteristics**

Dark black, medium sized with white or cream markings on thorax and abdomen, look armored (which reflects their lifestyles as nest invaders.)

**Food Resources**

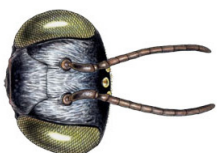
Visit flowers only to gather nectar, since they are parasitic bees they do not gather pollen.

**Nests**

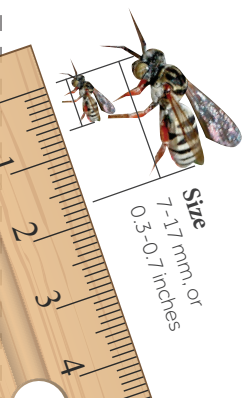
Lay eggs in the nest of their host bee species, primarily parasitize Long-horned bees like *Eucera*, *Melissodes* and *Peponapis*.

**Fun Fact**

These bees match their seasons to that of their host bees. They will follow their host bee back to the nest and then sneak in once the other female leaves.



*melanius*



**Size**  
7-17 mm, or  
0.3-0.7 inches

*Genus Xylocopa*

**Physical Characteristics**

Robust bees, large round head, shiny abdomen, hairy thorax with dark wings, black, dark metallic blue, or green in color and males are sometimes golden.

**Food Resources**

They like larger open flowers and will often rob flowers of nectar by slicing a hole in the base of a flower to suck out the nectar.

**Nests**

Make their own tunnels in wood or pith. Bee generations can overlap and mothers and daughters can share nests. Males will guard the nests and chase away even humans (but do not have stingers so they will not hurt!)

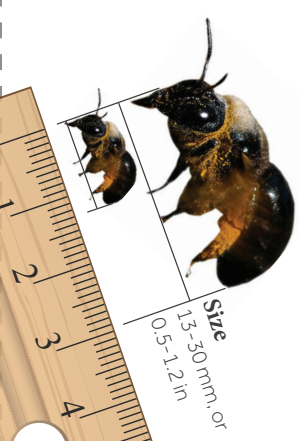
**Fun Fact**

Some males will use scents to attract females to their territories.



*tabaniformis*

*californica*



**Size**  
13-30 mm, or  
0.5-1.2 in

*greatsunflowerorgonocopa*



150 species  
worldwide,  
108 in North  
America

*greatsunflowerorgonocopa*



400 species  
worldwide,  
32 in North  
America



**Genus Triepeolus**  
(tri-e-PEE-o-lus)

Cuckoo Bees  
Family Apidae



**Genus Xylocopa**  
(zile-low-COPE-uh)

Large Carpenter Bees  
Family Apidae



Genus *Bombus*

## Physical Characteristics

Very large hairy bees, with yellow, black, orange or red bands of color or markings. Species can be distinguished by their hair color patterns, but colors change within a species across locations.

## Food Resources

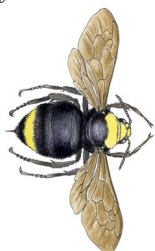
Queens forage early blooming willows, they especially love *Eschscholzia*, *Ceanothus*, tomatoes, blueberries, raspberries, cranberries and field beans.

## Nests

Nest in large cavities above or below ground, like abandoned rodent nests and bunch grasses; colonies can be small or rarely hold hundreds of bees. Queens forage in the early spring then stay underground once first workers emerge.

## Fun Fact

Makes a low buzzing sound, fly in an awkward manner making them seem like they are bumbling.



vosnesenskii

*californicus*

[greatsunflower.org/bombus](http://greatsunflower.org/bombus)



250 species  
worldwide,  
40 species in  
North America



# Genus Bombus

**Bumble Bees**  
*Family Apidae*