

### Ground-nesters

soil tunnels or  
under thatch  
~75% species U.S.

### Cavity-nesters

rock crevices,  
logs, twigs, stems  
~25% species U.S.

### Above & Below Ground

various species  
in the family



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### Sociality - species nesting behavior

**Solitary:** Single female builds a nest & provides for her brood ~90% spp.

**Communal:** Females share entrance, each provides her brood chambers

**Social:** Queen builds her nest & daughters help provide for her brood

### Photos

(1, 2) Charles Schurch Lewallen, (3) wikimedia.gnu.org, (4, 13) Bob Peterson, (5, 11) Sean McCann, (6) Hadel Go, (7) Steve Nanz, (8) Alain C., (9,17,19,21) LTM, (10) Tom Van Devender, (12, 31) T'ai H Roulston, (14) Elizabeth Sellers, (15) Sam Droege, (16) Jennifer Hrobar, (25) USGS Native Bee Lab, (18, 27) John Ascher, (20) Sarah Christopherson, (22) Steve Nanz, (23) Ashley Jacobs, (24) Owen McNamara, (26) Ricardo Ayala, (28) Sankax flickr, (29) Laurence Packer, (30) Hannah Sutton, (32, 33) S. Urquhart, (34) Lynette Schimming, (LTM) Laurel Treviño Murphy.

Winkler  
Family  
Foundation



# Native Bees of Texas

## ID Guide



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landowners-naturalists](https://w3.biosci.utexas.edu/jha/landowners-naturalists)



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# Key Native Pollinators



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Syrphid hover fly

## ORDER DIPTERA

### Flies

- Two wings
- Bristles or fine hair
- Short stubby antennae
- Indistinct body regions
- Eat nectar & detritus
- Mostly solitary



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Bombyliid bee fly



Alejandro Santillana

Mexican honey wasp

## ORDER HYMENOPTERA

### Wasps

- Four membranous wings
- Scant fine hair
- Tapered antennae
- Distinct body regions
- Svelte body & waist
- Eat nectar & insects
- Mostly social



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Flower wasp

### Bees (Apoidea)

- Four membranous wings
- Feather-branched hairs carry pollen loads:
  - scopa* leg/abdomen brushes hold dry pollen
  - corbicula* hind leg baskets hold moist pollen
- Long elbowed antennae
- Full-body: distinct head, thorax, abdomen
- Forage on nectar, gather pollen, some oils
- Oligolectic*: get pollen from few plant groups
- Polylectic*: get pollen from many plant groups
- Most are solitary generalists, few specialists



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## Striped Abdomen Mining Bees

*Andrenidae*

- Size:** tiny to large. **Shape/form:** medium, andreniform
- Color:** dark body, gray-striped abdomen
- Hair:** sparse, concentrated on hind legs
- Behavior:** oligolectic (Asteraceae, Rosaceae)
- Nesting:** solitary, ground nesters



39



40



41

## Striped Abdomen Plasterer Bees

*Colletidae*

- Size:** small to large. **Shape/form:** medium, andreniform
- Color:** silver-white-striped abdomen, may be pointy
- Hair:** thorax, may have flattened hair (stripes) on abdomen
- Behavior:** oligolectic (Asteraceae, Rosaceae, Solanaceae)
- Nesting:** solitary, ground or cavity nesters



42



43



44

## Striped Abdomen Oil-collecting Bees

*Melittidae*

- Size:** small to medium. **Shape/form:** medium, andreniform
- Color:** yellow and black striped abdomen
- Hair:** hairy body carries pollen
- Behavior:** eat/collect nectar, pollen, and plant oils; polylectic
- Nesting:** semi-social, ground or cavity nesters



45



46



47

## Green Sweat Bees

Halictidae

**Size:** medium. **Shape/form:** slender, andreniform

**Color:** metallic green, males – yellow-black striped abdomen

**Hair:** females' hind leg *scopa* carry dry pollen

**Behavior:** fast flying, darting, attracted to sweat, polylectic

**Nesting:** solitary/semi-social, ground nesters or wood cavity



## Striped Sweat Bees & Tiny Dark Bees

Halictidae

**Size:** tiny, small, medium. **Shape/form:** slender, andreniform

**Color:** dark, shiny metallic, light abdominal white/gray stripes

**Hair:** females' hind leg *scopa* carry dry pollen

**Behavior:** crawl in flower, fast jagged darting flight, polylectic

**Nesting:** solitary to semi-social, ground nesters



## Cuckoo Bees - Kleptoparasites

Except Andrenidae

**Size:** small. **Shape/form:** slender, epeoliform

**Color:** dark with white abdominal stripes

**Hair:** sparse or bare thorax & abdomen, lack *corbicula/scopa*

**Behavior:** drink nectar but don't collect pollen for brood

**Nesting:** lay eggs in other bees' nests, don't tend to the young



## Native Bee Form & Size



Bombiform



Euceriform



Megachiliform



Apiform



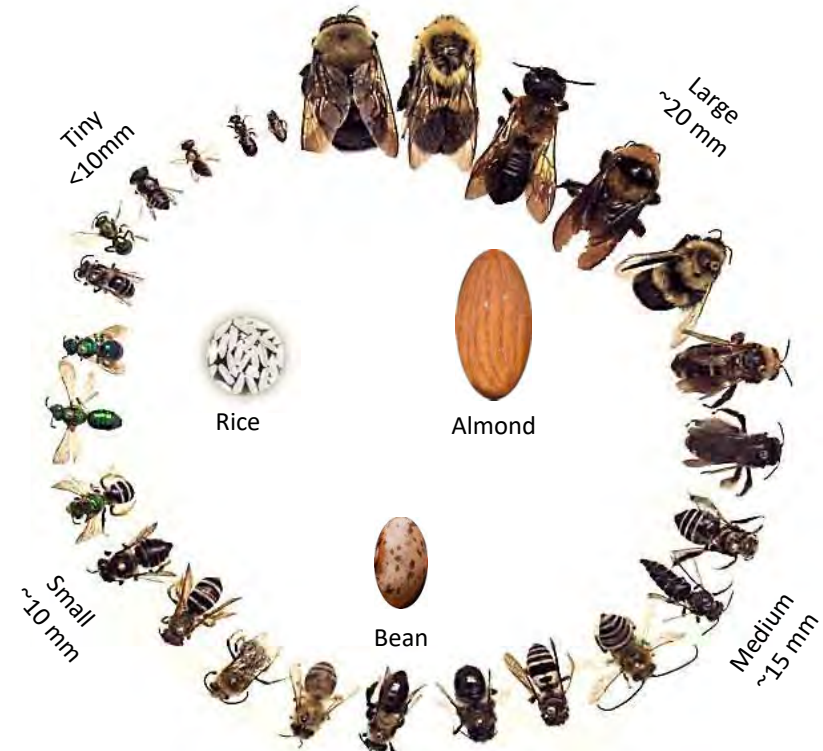
Hylaeiform



Andreniform



Epeoliform



Bee Ring  
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[www.virginia.edu/blandy](http://www.virginia.edu/blandy)



European Honeybee

Bee Forms  
Size References  
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## Bumble Bees

*Bombus*, Apidae

**Size:** large to very large. **Shape:** robust, bombiform  
**Color:** black & wide yellow bands on abdomen, yellow thorax  
**Hair:** covers entire body; hind leg *corbicula* carry moist pollen  
**Behavior:** slow flight with low buzzing sound, polylectic  
**Nesting:** social, ground nesters, spring queen - annual colony



Brown belt



American



Southern

## Hairy-legged, Digger, Chimney, Longhorn Bees

Apidae

**Size:** small-medium-large. **Shape:** robust, rounded, euceriform  
**Color:** striped abdomen. **Other:** males may have long antennae  
**Hair:** short, dense, velvety body, dry pollen on hind leg *scopa*  
**Behavior:** fly quickly and smoothly, oligolectic to polylectic  
**Nesting:** solitary to communal ground nesters



Digger



Chimney



Longhorn

## Large Carpenter Bees

*Xylocopa*, Apidae

**Size:** very large. **Shape:** robust, bombiform  
**Color:** shiny black to dark blue, mostly hairless abdomen  
**Hair:** hairy thorax/bald spot, hind leg *scopa* carry moist pollen  
**Behavior:** territorial males buzz around intruders, polylectic  
**Nesting:** solitary cavity nesters, bore into soft wood



Southern



Eastern



Horsefly-like

## Hairy-belly striped, Leafcutter/Carder Bees

Megachilidae

**Size:** small to medium. **Shape:** slender to robust, megachiliform  
**Color:** black & white stripes on abdomen, with silvery fine hairs  
**Hair:** female, stiff hairbrush *scopa* under abdomen for dry pollen  
**Behavior:** may raise abdomen if foraging for nectar, polylectic  
**Nesting:** solitary cavity nesters, line nest with leaves/plant hairs



Leafcutters



Carder

## Small Carpenter/Tiny Dark Bees

*Ceratina*, Apidae

**Size:** tiny. **Shape:** slender, hylaeiform  
**Color:** metallic dark black-blue, males may have face marking  
**Hair:** hairless except fem. hind-leg *scopa* that carry dry pollen  
**Behavior:** fast jagged flight, polylectic  
**Nesting:** solitary to semi-social, cavity nesters



4



7



8

Carve stem pith

## Hairy-belly metallic, Orchard/Mason

*Osmia*, Megachilidae

**Size:** small to medium. **Shape:** stout, rounded, megachiliform  
**Color:** metallic green, blue, or blue-black  
**Hair:** female, stiff hairbrush *scopa* under abdomen for dry pollen  
**Behavior:** spring to early summer, polylectic  
**Nesting:** solitary gregarious cavity nesters



15 Green



16 Blue



17

Masonry nest