

# **SOCIAL WASPS AND BEES**

---

Texas Master Beekeeper Program

Advanced Learning Module

# Social Wasps

- 100,000 species of wasps globally
  - 1000 of these species are social
    - 20 social wasp species are located in North America
- Form nests aerially or underground
- One reproductive queen for the entire colony
- Ex: Paper wasps, yellowjackets, Bald-faced hornets

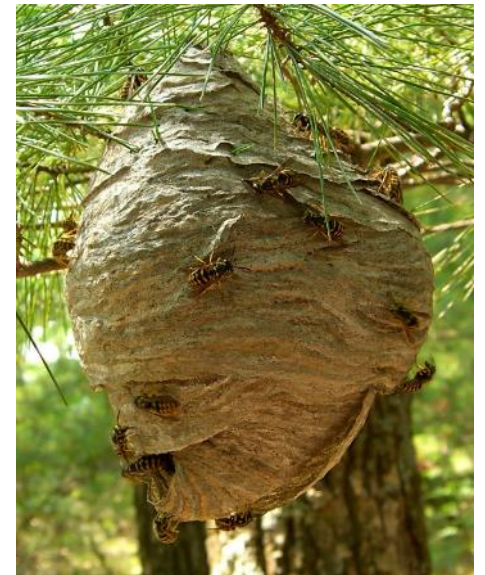
# Paper Wasps

- Adults are ~1 inch long and have a narrow waist
- Colors can vary across species
- Predatory insects
  - Collect caterpillars and other insect larvae to feed developing larvae
- Sometimes called “umbrella wasp” due to nest design
  - One exposed comb suspended from a single stalk
  - Built from wood fiber
  - Is not enclosed by an paper envelope
- Beneficial insect
  - Prey on plant pests



# Yellowjackets

- Adults are ~1/2 inch long
  - Black body with distinctive yellow markings
  - Hairless body
- Feed larvae other insects and spiders
- Collect nectar as well, but do not create honey
- Nests are composed of stacked round combs, surrounded by an envelope.
- Nests are often located underground, but can be found in house cavities or aerial locations.
- A colony can contain up to 20,000 adults



# Bald-faced Hornet

- *Dolichovespula maculata*– only species found in Texas
- Adults are ~3/4 inch long
  - Black with white markings– mostly located on head and end of abdomen
- Larvae are fed nectar and other insects
- Nests consist of 2-4 stacked combs, surrounded by a paper envelope with the entrance located at the bottom
- Nests are only located aerially
- One colony may contain 200-400 adults





# Native Bees

- 20,000 species in the world
  - 4,000 species in the United States
    - 700 species in Texas
- One female establishes and provides for the nest.
- Sometimes groups of bees will nest together.
- Vary in the habitats occupied
  - Habitat loss has led to the decrease of many of these species
- Two main habitat substrates:
  - Ground
  - Wood/Cavity

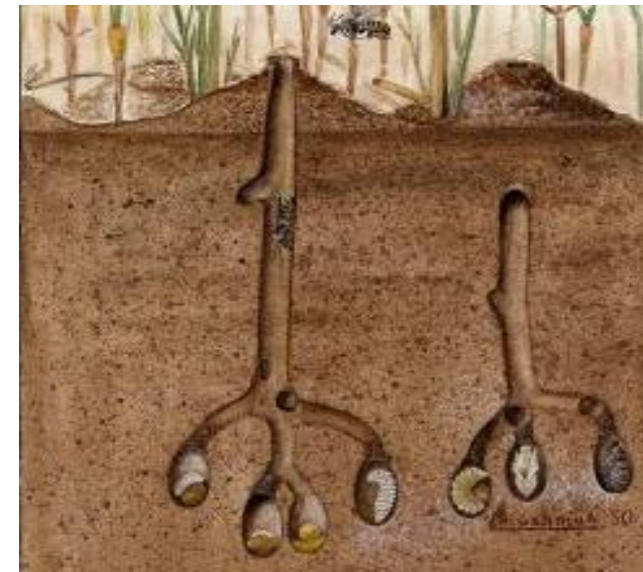


# Texas Ground Nesting Bees

- 70% of bees create nests in the ground.
- Examples:
  - Metallic Sweat Bees
  - Small Sweat Bees
  - Bumble Bees

# Sweat Bees

- Solitary insect
- Attracted to salt in sweat
- Coloring varies across species
  - Dull/metallic black → metallic green/blue/purple
- May nest communally
  - Females use the same entrance, but occupy their own nest
- Adults feed on nectar
- Larvae are provisioned with pollen and nectar
- Usually create nests underground
- Ex: metallic sweat bee, small sweat bee





# Bumble Bees



- Black and yellow bodies, very fuzzy
  - Often confused with Carpenter Bees
    - Bumblebees have hairy abdomens, whereas carpenter bees do not
- Colonies contain about 100-500 workers
- Nests are located in underground cavities or just above ground.
  - Create nests in already formed underground cavities
    - Ex: empty rodent burrows
- Adults collect nectar and pollen
  - Convert nectar into honey as a food supply during a dearth



Texas has nine bumblebee species. Here are some features to help you identify them.

**Sonoran bumblebee**  
*Bombus sonorus*



**Two-spotted bumblebee**  
*Bombus bimaculatus*



**Black and gold bumblebee**  
*Bombus auricomus*



**Common eastern bumblebee**  
*Bombus impatiens*



**Golden northern bumblebee**  
*Bombus fervidus*



**Variable cuckoo bumblebee**  
*Bombus variabilis*



**Southern plains bumblebee**  
*Bombus fraternus*



**Brown-belted bumblebee**  
*Bombus griseocollis*



**American bumblebee**  
*Bombus pennsylvanicus*



# Texas Wood Nesting Bees

- 30% of native bees create their nests in wood.
- Possible nest sites include:
  - Dead wood excavated cavities
  - Pithy stems
  - Existing cavities
- Mostly solitary bees

# Carpenter Bees

- *Xylocopa spp.*
- Solitary
- Adults are  $\frac{3}{4}$ -1 inch long
- Often mistaken as a bumble bee
  - Carpenter bees have black, hairless abdomens, and a hairy thorax
- Forage on nectar and pollen
  - Use sonication ("buzz pollination")
  - Nectar robbers
- Excavate nests in wood tunnels
  - Prefer weathered wood (ex: siding, decks, fence posts, etc.)



# Mason Orchard Bee

- *Osmia spp.*
- Solitary
- Adults are ~1/2" long
- Blue-black metallic coloring
- Excellent pollinators of fruit trees
- Collect pollen and nectar for brood food
- Create nests in already existing cavities
  - Trees, wood, hollow stems
- Do not share nests, but will build them close to one another



# Leaf Cutter Bees

- *Megachile spp.*
- Solitary
- Adults ~1/2 inch long
- Dark coloring with light banding on abdomen
- Create nests in soft woody materials (pithy plant stems, rotting wood)
  - Line individual brood cells with leaf cuttings
- Provide each cell with nectar and pollen





# Cleptoparasitic (Cuckoo) Bees

- Ex: *Nomada spp.*
- Solitary
- Does not create or care for it's own nest
- Lays eggs in a separate species' nest
  - When larvae hatch, they consume the host species' pollen source and kill the host larvae.
- Adults do not have to collect pollen, but will feed on nectar as an energy source.

