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 $\rightarrow$ 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 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 ¾-1 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 its 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.