Some Basic Pollinating Insect “Groups”

- **Bees**
  - Wings: Non-scaled (4)
  - Body: Fuzzy
  - Behavior when flying/landing/disturbed: Directed "exploratory" "Soft" landing

- **Wasps**
  - Wings: Non-scaled (4)
  - Body: Smooth
  - Behavior when flying/landing/disturbed: Directed "exploratory" "Soft" landing

- **Flies**
  - Wings: Non-scaled (2)
  - Body: Smooth or Fuzzy
  - Behavior when flying/landing/disturbed: Stationary hovering Rapid landing/takeoff

- **Leps**
  - Wings: Scaled (4)
  - Body: Scaly
  - Behavior when flying/landing/disturbed: Directed "exploratory" "Soft" landing

- **Beetles**
  - Wings: Shell-like Cover
  - Body: Smooth or Fuzzy
  - Behavior when flying/landing/disturbed: Take off/land often not noticed

- **Others**
  - Wings: Non-scaled (4)
  - Body: Smooth
  - Behavior when flying/landing/disturbed: Take off/land often not noticed

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“Big Bucket ‘o’ Pollinators”

The challenge of trying to figure out what you are observing …
If you think you are seeing a **BEE** it might be a:

**Wasp**
- IF none of the hairs on its body are plumed or feather-like (good luck!)
- IF it is spending more time moving around on foliage (looking for prey) than nectaring or collecting pollen
- IF it is bright metallic green or blue, but integument is heavily pitted and body/hind legs look relatively “hairless” (cuckoo wasp)
- IF it is hovering (stationary) above flower and has large light-colored eyes on triangular head (sand wasp)

**Fly**
- IF it clearly only has one pair of wings (good luck!)
- IF it is stationary on foliage or flower with wings in a V-formation
- IF a long straight forward-directed proboscis is clearly visible (bee fly)
- IF its wings have large brown patches or patterns made of many small brown patches (bee fly)
- IF tiny bristle-like antennae are visible on its face (syrphid fly)
- IF it is hovering (stationary) above flower for an extended period of time (syrphid fly)

**Beetle**
- IF front wings are actually leathery sheaths to cover hind wings that are used for flying
If you think you are seeing a **WASP** it might be a:

**Bee**
- If some of the hairs on its body are plumed or feather-like (good luck!)
- If it is spending more time crawling around inside a flower, especially on pollen-producing structures, than on leaves and stems of the plant
- If underside of abdomen or hind legs are clearly hairy, especially if pollen is accumulating on them

**Fly**
- If it clearly only has one pair of wings (good luck!)
- If it is stationary on foliage or flower with wings in a V-formation
- If it is hovering (stationary) above flower for an extended period of time (syrphid fly)
- If tiny bristle-like antennae are visible on its face (syrphid fly)
- If the antenna appears to have a swollen knob at the end (thick-headed or mydas fly)

**Beetle**
- If front wings are actually leathery sheaths to cover hind wings that are used for flying

**Moth**
- If body is covered with scales
- If sucking nectar from flower with a tube-like proboscis

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If you can:
Count the wings
Look at the antennae
Look at the eyes
Look at the mouthparts
Look at the legs
Overall flying/landing/hovering/feeding behavior
If you can:
Count the wings
Look at the antennae
Look at the eyes
Look at the mouthparts
Look at the legs
Color of wings
Overall flying/landing/hovering/feeding behavior

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Leafcutter Bees
(family Megachilidae)
Leafcutter Bees
(family Megachilidae)

1. Females collect pollen on underside of abdomen
2. Many nest in holes in wood or plant stems lined with plant material
3. FW with basal vein (bv) not “strongly arched” – and usually 2 submarginal cells (SM)
4. HW with jugal lobe (jl) shorter than submedian cell (SMD) (good luck!)
5. More “boxy” than slender
Sweat Bees (family Halictidae)

Leafcutter Bee (Megachilidae)
Orchard Bee (Megachilidae)
Cuckoo WASP (Chrysidae)
Solitary WASP (Sphecidae)
Sweat Bees (family Halictidae)

1. Females collect pollen on tibia and femur of hind leg (males and parasitic species do not collect pollen)
2. Most nest in ground (bare soil in sunny location)
3. FW with “strongly arched” basal vein (bv) – and usually 3 submarginal cells (SM)
4. HW with jugal lobe (jl) longer than submedian cell (SMD) (good luck!)
5. More slender than “boxy”
6. Behavior ranges from solitary to social
7. Parasites (cleptoparasites) lay egg in nest of other bee – host egg killed by female or newly hatched larva
8. Medium-sized metallic green species most noticeable (such as Agapostemon), but small, relatively nondescript Lasioglossum is largest genus and usually most common (of all bees)
Mining (Andrenid) Bees (family Andrenidae)
1. Over 1200 species in North America
2. Gnat-sized (*Perdita* sp.) to an inch long
3. Females collect pollen on tibia
4. All nest in soil (in areas with sparse vegetation) – a couple inches to several feet below surface
5. Some nest in colonies
6. Basal vein (bv) not “strongly arched”– and 2 or 3 submarginal cells (depending on species)
7. HW with jugal lobe (jl) longer than submedian cell (SMD) - or equivalent in length?
8. Two subantennal sutures (sas) below each antennal socket (yeah, right!!!)
Digger Bees
(Apidae – same family as Honey Bees/Bumble Bees)

1. Females collect pollen on hind tibia
2. Most nest in ground (bare soil in sunny location)
3. FW with basal vein (bv) not “strongly arched” – and usually 3 submarginal cells (SM)
4. HW with jugal lobe (jl) shorter than submedian cell (SMD) (good luck!)

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Cuckoo Bees
(Apidae – same family as Honey Bees/Bumble Bees)

1. FW with basal vein (bv) not “strongly arched” – and usually 3 submarginal cells (SM)
2. HW with jugal lobe (jl) shorter than submedian cell (SMD) (good luck still!)
3. Overall smooth and wasp-like (but do have some plumed hairs)
4. Do not collect pollen on tibia or abdomen
5. Cleptoparasites – lay eggs in provisioned nest of other bees – female bee or newly emerged larva kills original occupant and feeds on pollen/nectar collected by nest-builder

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