

# Bombus

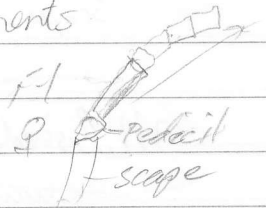
~~Stenobothrus~~

- B. bifarius - notch on back of thorax through yellow
- B. huntii yellow is complete on thorax  
yellow 2 red yellow on abdomen
- B. centralis - larger malar space  
2 yellow 2 red on abdomen
- B. flavifrons (more black on front of thorax) → mix of yellow and black hairs on front of thorax. Y Y D D, long face

same malar space

Morphology: malar space, length of antennal segments

→ Batesian/Mullerian mimicry.



B. silvicolus

Not sure which → \* Big-eyed males. Perching & territorial

B. sonorae

B. nevadensis → longer malar space & clypeus (area between eye & mandible)

B. morrisoni →

B. fervidus  
(bright yellow guys)

♀ tibia on  
Midbasitarsus

← Fervidus & sonorae

B. nevadensis & morrisoni

rufus sinctus

<sup>shortest</sup>  
Malar Space - Distance between base of the mandible & the margin of the compound eye.

all Bees w/ only a few exceptions

Males: extra abdominal / extra antennal segment  
→ 7/6

longer malar space indicates a longer tongue.

Box 1 *Sonchus*

2. ~~ferrugineus~~

23. *ferrugineus*

43 ♀ *occidentalis*

3. *rufusinervis*

Box 2 *nevidensis*

*morisai*

B. f. *flavipes*

long face

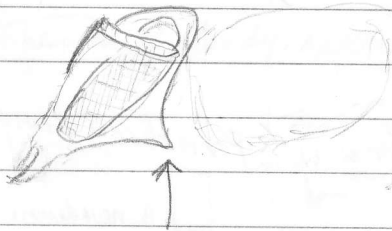
green colored hairs - cloudy appearance due to yellow + black hairs on thorax.

4400

Megachile: some males of some ~~species~~  
Subgenera of Megachile have "blinders"  
for females in mating ritual.

Long Torgued Bees	vs.	Short Torgued Bees
short Jugal lobe.		long Jugal lobe
- Tongue Structure (sheath...)	←	→
Scopa more confined to		

Melissodes: ultra long Antennae → Scopa hairs branched  
- lucorum, stellatoria also (black antennae) Spring fly  
→ Simple Scopa hair, sparse



Genal tooth of Halictus ligatus

"Genal Tooth"

~~Colletes~~ Halictus ligatus: ~~large~~ 2 large teeth on head below mandibles

Agopostemon: agochlorella watch out  
carina on back of propodium to distinguish  
from other metallic halictids?

\* Andrena: distinctive ~~to~~ facial fovea  
- evaporative surface  
(Colletes has to some extent too)

Halictus: Notch in hairs at tip of abdomen -  
Curved basal vein -  
No facial fovea, fairly naked face -  
femoratus / rubicundus (f) first band broad across uniform  
(r) broad - narrow - broad band

Colletidae → Family characterized by bilobed tongue-tip.

Colletes: last recurrent vein (row below submarginals) is S-shaped.  
head triangular shaped.

"jacies of their faces."

Colletes / Halictus / Andrena → hair on ~~all~~ entire length of their legs  
Anthophora / Melissodes / Didea → hair on hind leg ~~only on first 2 seg~~  
not on femur.

Anthophora / Melissoidea Marginal Cell Doesn't protrude much from submarginal cells.

Anthophora - 3rd Submarginal cell slightly curved - sides are Equal sized.

Melissoidea - Top Shorter than bottom

See p. 72. : 230/231

Diadasia

Lasioglossum | Weakened distal veins of forewing

- Andreninae 2 major subgenera

- Panurginae

Very diverse Group

Diadasia Venation of hind wing & last cross vein CU-m

♂  
About equal ratio

☆ 3 subgenera of Lasioglossum

Dialictus

2 weakened

Metallic

(Veins - on p. 52.)

Euclyptus

2 weakened

Black

• Lasioglossum

1 weakened

\* Structure of ~~even~~ crevices that harbor mites good to divide

Lasioglossum lasioglossum

- Acridarea for Acarina

Mites are fungal feeders and can be beneficial

L. Lasioglossum: Basal hair bands on Abdominal segments

Halictus: Apical hair bands.

(Megachilidae)

Heriades: "sculptured on top of propodeum"

Halictus tricoloratus: Round head shape.

Compared to Dialictus.

"Sphecoid" Wasps.

- Ampulicidae
- Sphecidae
- Crabronidae