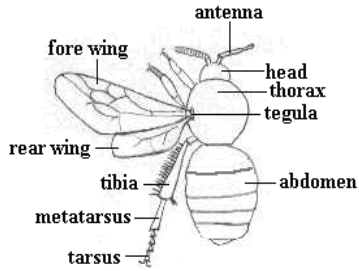


The segments of the abdomen are called tergites. They are named T₁ through T₆. T₁ is the tergite closest to the thorax, T₆ is the tergite at the end of the abdomen.



GUIDE TO THE *BOMBUS* OF SAN FRANCISCO

By Quinn S. McFrederick

Bumblebees belong to the genus *Bombus* and are important pollinators of a quarter of the plants found in California. Five species are common in San Francisco; four other species have been recorded in San Francisco in the past. Males can be differentiated from females by having longer antennae (11 segments versus 10 segments on the female), longer abdomens (7 segments versus 6 segments on females) and no corbicula (corbicula are hairless indentations on bees hind legs that are used to carry pollen, i.e. the pollen basket). The diagrams in this guide are used by permission, from *The Bumblebees and*

Cuckoo Bumblebees of California, by Robbin Thorp et. al. Bulletin of the California Insect Survey, Volume 23 1983.

BEES WITH A LARGE BLACK PATCH IN THE MIDDLE

B. vosnesenskii, *B. caliginosus* and *B. californicus* all have yellow hairs at the front and back of their bodies and a large black patch in the center. *B. vosnesenskii* is the most common and has short hairs that looked cropped and yellow hairs on the face. *B. californicus* is the only one of the three with black hairs on the face. *B. caliginosus* is shaggier than *B. vosnesenskii* and has yellowhairs on the underside of the abdomen where *B. vosnesenskii* has only black hairs on the underside of the abdomen.

B. vosnesenskii



B. californicus



B. caliginosus



BEES WITH YELLOW SEGMENTS THROUGHOUT

B. sitkensis, *B. bifarius* (no photo available) and *B. melanopygus (edwardsii)* all have yellow hairs in the middle of their bodies. *B. flavifrons* is the only one of the four with a yellow band of hairs on the front of the abdomen and black on the rest of the abdomen. *B. sitkensis* has a band of yellow hairs on the front of the thorax, black on the rest of the thorax and two yellow bands on the abdomen. *B. edwardsii* has yellow hairs on the front and back of the thorax and two yellow bands on the abdomen, one on the front and one near the back.

B. sitkensis



B. melanopygus (edwardsii)



Bees with large black patch in middle

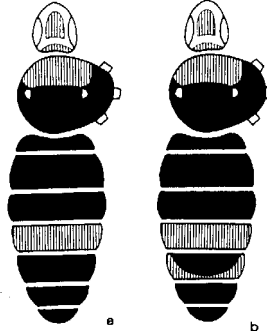
1) *Bombus vosnesenskii* The most common bumblebee in San Francisco. Closely cropped hairs with yellow hairs in front and a yellow stripe on the rear. Large black patch between the yellow hairs. Only black hairs on the underside of the abdomen.

Face yellow, front of thorax yellow, back of thorax to T3 black, T4 yellow, T5 and T6 black. Hairs appear closely cropped.



Female *B. vosnesenskii*

Male *B. vosnesenskii*



2) *Bombus caliginosus* Similar to *B. vosnesenskii* but with shaggier hairs and yellow hairs on the underside of the abdomen.

Face yellow, front of thorax yellow, back of thorax to T3 black, T4 yellow, T5 and T6 black. Hairs shaggy looking.

B. caliginosus female

B. caliginosus male



142 caliginosus 144

115 caliginosus 1

3) *Bombus californicus* Similar to *B. vosnesenskii* but with black hairs on the face. Face black, front of thorax yellow, back of thorax to T3 black, T4 yellow, T5 and T6 black.



B. californicus female



135 californicus K

B. californicus male



109

Bees with yellow segments throughout

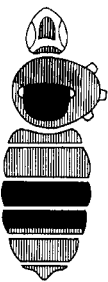
4) *Bombus sitkensis* One band of yellow and one band of rust hairs on the abdomen. More black than yellow hairs on the back of the thorax.

Females: Face with yellow and black hairs, front of thorax yellow, black patch in middle of thorax, back of thorax yellow, T1, T2 yellow; T3, T4 black: T4 with yellow band posterior. T5, T6 rusty yellow. Males: Head and thorax like female, yellow on back of T3, T4 and T5, T6 and T7 rusty.



B. sitkensis female

B. sitkensis male



149 sitkensis



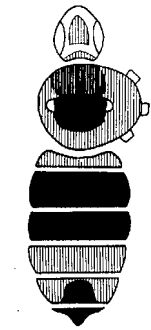
122 sitkensis

5) *Bombus melanopygus (edwardsii)* Yellow hairs completely enclose a black patch on the thorax. Yellow bands on the top and bottom of the abdomen (T1, T4 and T5 with yellow in female; in male T1, T2 T4 and T5 have yellow).

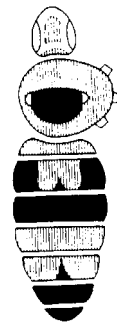


B. melanopygus (edwardsii) female

B. melanopygus (edwardsii) male



44 edwardsii



117 edwardsii

UNCOMMON BUMBLEBEES (may no longer range in San Francisco)

6) *Bombus bifarius* Similar to *B. edwardsii* but with black hairs separating the yellow hairs on the end of the thorax. Less yellow on the abdomen than *B. melanopygus (edwardsii)*.

B. Bifarius female

B. bifarius male



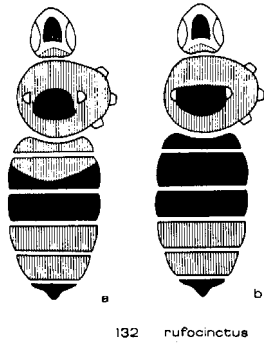
141 bifarius



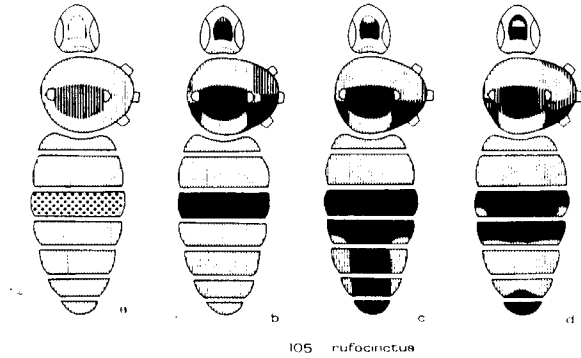
114 bifarius

7) *Bombus rufocinctus* Black hairs on face, black patch surrounded by yellow on thorax, otherwise variable.

B. rufocinctus female

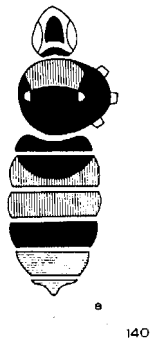


B. rufocinctus male

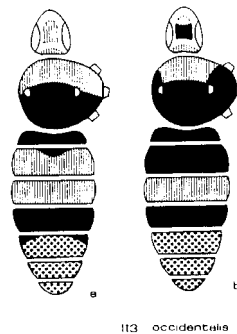


8) *Bombus occidentalis* Once common, but populations have recently crashed, likely due to introduction of *Nosema bombini* from commercial *B. occidentalis* colonies used for greenhouse tomato fertilization. Black face, yellow in front of thorax, black on rest of thorax. The common form in San Francisco had yellow on the back T4, T5 and T6 but was black on T1, T2 and T3. Similar to *B. californicus* but with more yellow of back of abdomen.

B. occidentalis female

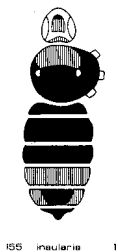


B. occidentalis male



9) *Bombus (Psithyrus) insularis* Parasite of other *Bombus* spp. Lacks corbicula, has less hair and the abdomen is somewhat curled under.

B. insularis female



B. insularis male

