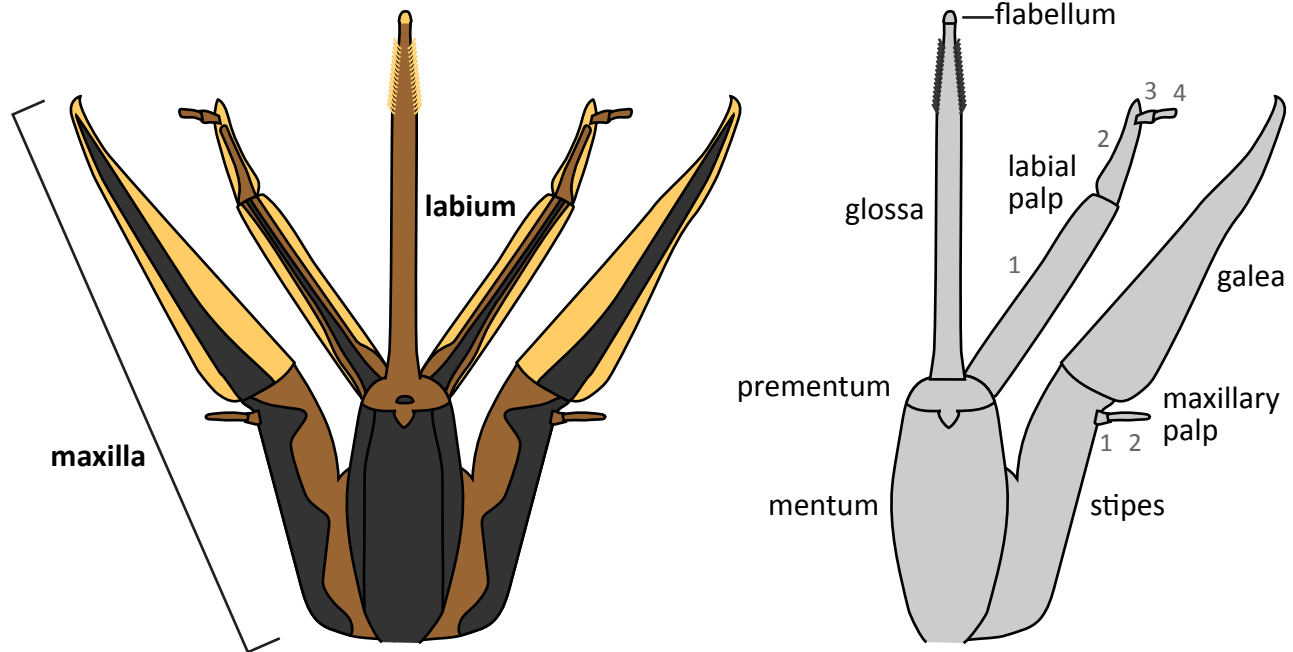
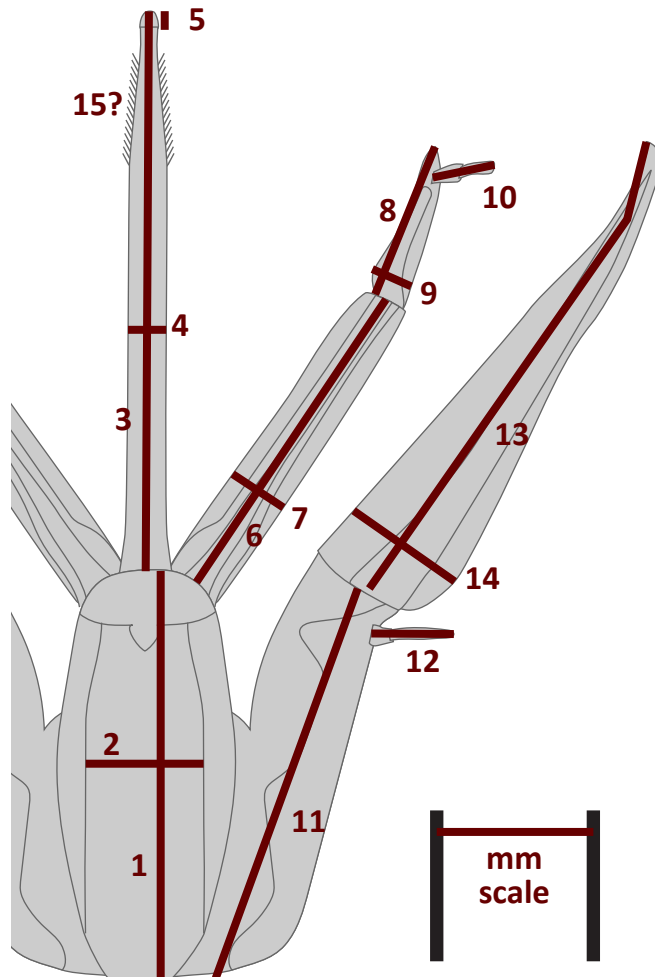


# Bumblebee mouthparts



**The mouthparts of a generalized bumblebee.** The jaw-like **mandibles** (not shown here) are used in sculpting wax during nest-building. The **maxillae** and **labium** are used to collect nectar. The paired maxillae are found on the sides. The base of the maxilla is the **stipes**. At the distal end of the stipes a small **maxillary palp** branches laterally and has two short segments. The maxilla ends in a large distal **galea**. The galea is not jointed, but the tip may curl slightly. Its edges also taper to a thin membrane. The middle of the mouthparts is the labium, this structure is formed by the fusion of left and right appendages during embryonic development. The tough base of the labium is the **mentum**, followed by a small flexible region called the **prementum**. Two **labial palps** branch left and right. The first two segments of the labial palps are large, and like the galea, they taper to a thin membrane at their edges. Two smaller distal segments appear at the end of the labial palps. At the middle of the mouthparts is the **glossa**. This long structure should appear to have many fine segments and a channel or supportive rod running down its center. In some species, the distal third of the glossa may be covered in fine hairs. At the tip of the glossa is a small round bulb called the **flabellum**.

# Bumblebee mouthpart measurements



1. Mentum length
2. Mentum width, between the robust inner “edges”
3. Glossa length
4. Glossa width, at the mid-point
5. Flabellum length
- 6-7. Labial palpomere 1: length & width
- 8-9. Labial palpomere 2: length & width
10. Distal labial palpomeres length
11. Stipes length
12. Maxillary palp length
13. Galea length
14. Galea width
15. Setose distal glossa? (T/F)

Using ImageJ, record the pixel distances for each measurement. For structures on left and right, measure only one, arbitrarily. If any structure is missing or damaged such that the measurement cannot be made accurately, record NA. If a structure is curved or bent, record the length using a segmented line.

Widths should be measured at the widest point of each structure and perpendicular to its length. For the glossa, which is similar in width for most of its length, measure width halfway down its length.

Be sure to also measure the scale bar! Ideally, take the mean of 3 measurements of 1-mm intervals, near the mouthparts in the image.