



## Specifications for a bee imaging box

This is how we put together our bee imaging box so the bee, labels, and ruler are all at the same height. It also provides for a neutral grey background. The goal is to build a box so the resulting image looks like the one below (Fig. 1) and has the following specifications.

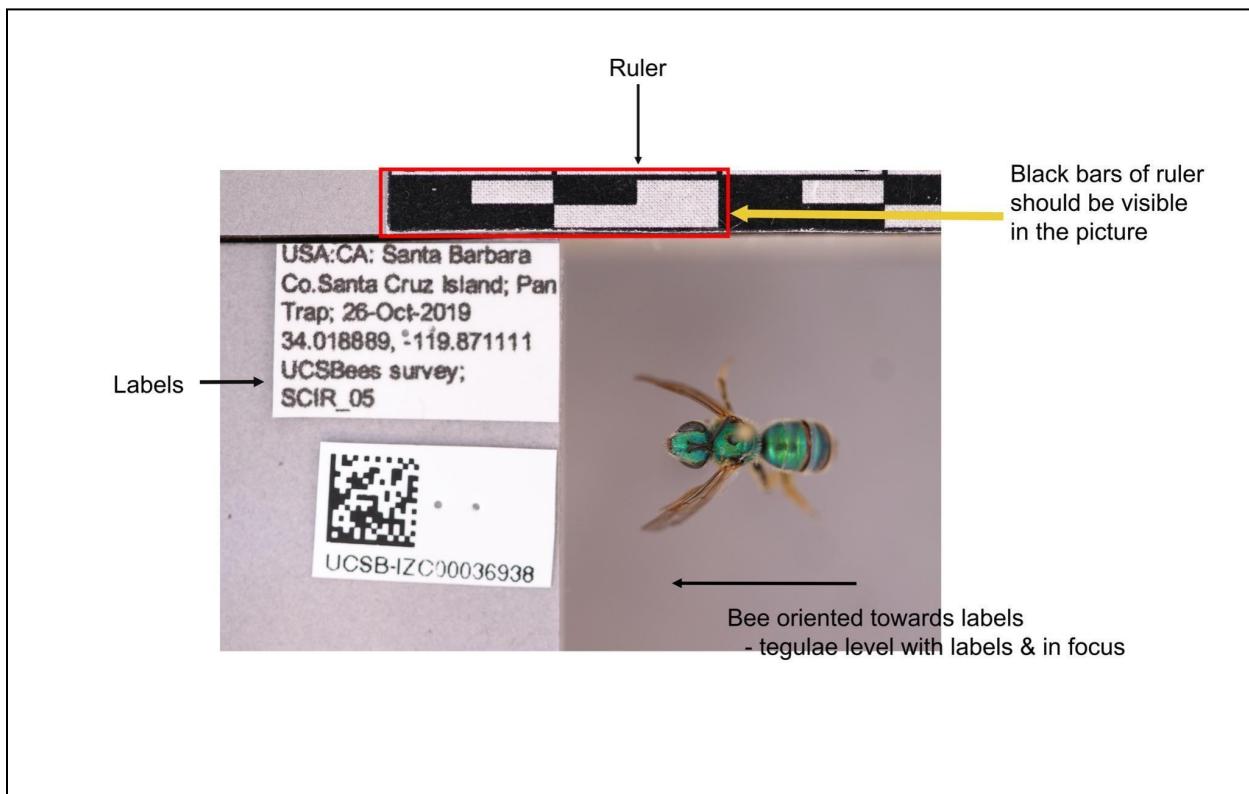


Fig. 1 - Dorsal Label image for the Big Bee project

### Image specifications

**The image should include the ruler, specifically the bottom black bars.** The image should be taken with the ruler at the top, labels at the left side (positioned so they are readable) and the specimen to the right. Should have a neutral grey background (especially for dark bees). Orient the bee towards the labels.

**The bee should be dorsal and the bee tegula should be level with the ruler with both tegulae visible from above.** The bee thorax should be straight. This positioning is important for doing measurements from the images later. Helps to view the bee and ruler from the side to see if it is level:

Bee tegula should be level with top of ruler. Thorax straight and flat.



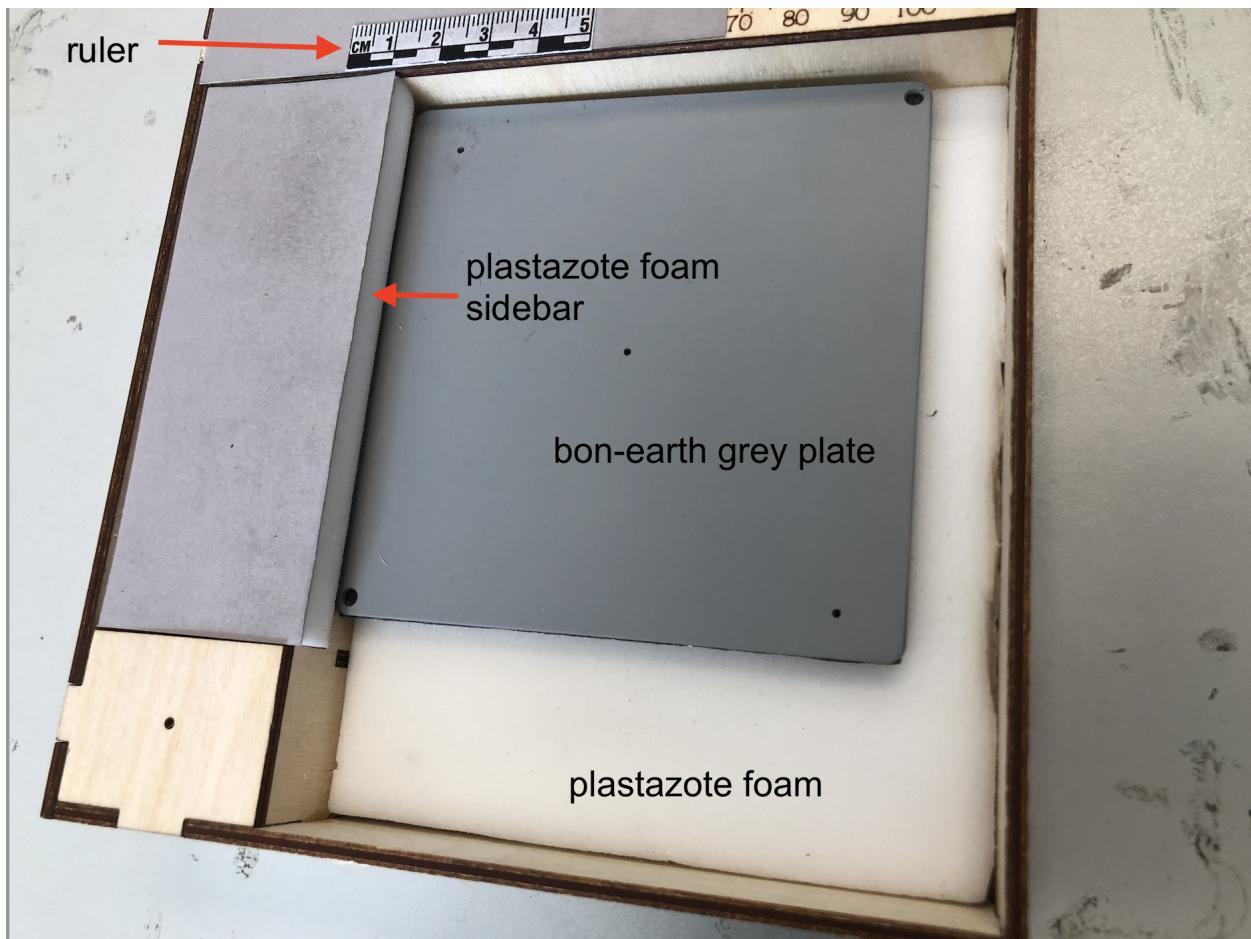


### **Box Assembly**

The Essig imaging boxes arrive unassembled. Here is a video to demo how to assemble the box when it arrives: <https://youtu.be/JtEleINcw2Y>

### **Box Anatomy**

To make sure the bee is at the same height as the ruler and labels, the foam has to be added to the box. Two layers of foam, or foam + bon-earth grey plate are required to get the bee up to the height of the ruler. Bon-earth grey plates are recommended because they reduce the issue of having to keep replacing paper below the bee and limit the number of holes that can be created that show up in the image. However, neutral grey paper under the bee is a good alternative. 11% neutral grey is recommended, but not always easy to find. UCSB has used [Glacier Grey paper](#).





**Adhesive Photo Evidence Scale rulers** can be purchased from Amazon. The rulers come in many colors and scales. When purchasing, you would want to specify the grey rulers with 0.05 cm scale bars to match the scale in the image above. This can be requested by contacting the supplier directly. UCSB has extra rulers if needed. The rulers come in various lengths. **You want to purchase the 1cm version!**

[https://www.amazon.com/gp/product/B00AIL593Y/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o02\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00AIL593Y/ref=ppx_yo_dt_b_asin_title_o02_s00?ie=UTF8&psc=1)

**Or**

[https://forensicsource.com/collections/rulers-scales/products/adhesive-white-scale-s-pack-of-50-f\\_107](https://forensicsource.com/collections/rulers-scales/products/adhesive-white-scale-s-pack-of-50-f_107)

**Bon-Earth Grey plates** can be ordered via <https://www.bon-earth.org/gray-plates> and the medium-sized plates fit into the Essig imaging box. Three plates come with an order. New holes have to be drilled in the plates to place the bee in the corner of the box. We drilled holes in four different locations to accommodate different-sized bees. One plate was left not drilled in case new holes need to be drilled in the future. Images of hole placement are below. When drilling holes, it is important not to go far past the hard plastic top of the plate. Going too far could damage the foam underneath.

