

# Chihuahuan Desert Bee Biodiversity Initiative

## Directions for Pan Trapping

The Chihuahuan Desert has long been hypothesized to harbor one of the richest bee diversities in the world. Bee diversity tends to be highest in our world's deserts, particularly within the arid regions right above the tropics. Previous bee specialists (known formerly as melittologists) have occasionally sampled the Chihuahuan Desert, but most melittologists have focused on sampling the neighboring arid lands of the Sonoran and Mojave, largely because their universities happen to be near these deserts.

The Chihuahuan Desert Bee Biodiversity Initiative has just started to document the diversity of bees within the region, but we need your help to launch this effort. We would like to work with you in the greater El Paso and Las Cruces area. Basically, we want to understand how urban areas like El Paso and Las Cruces shape bee diversity and what steps do we need to take to preserve this unique biodiversity. Before we can truly take any conservation steps, we need to document the diversity in the area, and this is where we want you to help us pan trap bees and other floral insect visitors in your gardens and yards.

Pan traps are essentially shallow blue and yellow bowls filled with soapy water. They mimic the colors that floral insect visitors like bees see when they visit flowers (bees tend to see blues and yellows extremely well). Instead of gathering pollen and drinking nectar as they would with a living flower, the visiting insect falls in the soapy water. We set these traps out over a 24 hour period to observe what floral insect visitors may come. These insect specimens are a snapshot of the floral insect diversity in a garden or yard at certain time. By consistently sampling for a long period of time, we can build a larger picture of where bees are within El Paso and Las Cruces that documents where bee diversity lives in the area. This information can directly go into conservation planning for open spaces like Resler Canyon and Franklin Mountains State Park along with sustainable economic enterprises ranging from urban farming to native plant landscaping.

Pan traps collect specimens, and this is critical for us to document diversity. We cannot easily identify floral insect visitors by sight, and we must collect specimens to identify specimens to the species level. Multiple studies from research labs around the country have demonstrated that pan trapping does not diminish local insect diversity. We ask that you trap once a month for a 24 hour period, a sampling regime that does not affect local insect populations.

The key to this endeavor is that we work together. Please document when and where you trap within your yards and gardens along with any plants in bloom. Reach out to us if you have any questions! We will work to identify any specimens that you collect in a timely manner and let you know what we find. In the future, we would like to help you work with this data to plant for bee diversity as well as take additional small steps to protect this natural heritage.

### **Materials:**

- 10 bowls: 5 yellow and 5 blue from Party City (not from a dollar store, as the color washes off of those bowls after a few uses)
- Water
- Unscented dish soap (any kind)
- Coffee filters

- Funnel
- 70% rubbing or isopropyl alcohol
- Empty container with lid (glass or plastic)

### **Directions:**

#### **Set up:**

We will be sampling approximately every four weeks. Each sampling period will be 24 consecutive hours. Traps (the 5 yellow and 5 blue bowls) should be put out on days with minimal cloud cover and minimal wind. Traps should be placed near or under any flowering plants. This location for sampling will change each month depending on the flowers in your yard or garden.

1. Place the traps about 3 meters (or about 9 feet) apart. If you do not have room for 10 bowls spaced 9 feet apart, place what you have room for, but be sure you use equal number of yellow and blue bowls, be it one of each or three of each. Record the number of bowls used on the data sheet.
2. Fill each bowl  $\frac{1}{2}$  to  $\frac{3}{4}$  full with water.
3. Add a couple drops of dish soap, and stir to mix. Alternatively, you can fill a container (e.g., a pitcher) with water, add the few drops of soap, and then use that soapy water to fill the bowls.
4. You should submerge a small rock in each bowl to prevent it being blown over. The rock must be submerged below water surface. If it is hot and the bowl is in the direct sun, you might need to add more water during the day to keep the rock submerged.
5. Wait 24 hours before collection.

### **Collection:**

1. At the end of the 24 hours pour the soapy water of all 5 of your blue traps through a coffee filter placed in the funnel. Discard the soapy water.
2. Place the coffee filter, with all the animals that were trapped, into a container that may be sealed tight.
3. Cover with alcohol (70% rubbing or isopropyl alcohol) to submerge the coffee filter.
4. Write the collection information given below on a small piece of paper and place inside the container.
5. Repeat the steps to filter the animals from the 5 yellow traps, keeping the contents from the different colored traps in separate container. The coffee filter contents will be identified at the UTEP lab.
6. Place a small piece of paper with the following information written on it in the container with the specimens: date of trapping, location of traps in the yard, what is around the bowls, “blue trap” (bowl) or “yellow trap” (bowl), and your name. *USE PENCIL ONLY* as the rubbing alcohol will not affect the writing.
7. Once in alcohol contact The Frontera Land Alliance office for drop off information. (915-351-8352 or [janae@Fronteralandalliance.org](mailto:janae@Fronteralandalliance.org).)
8. Please do not hold to more than four months of sampling, please turn in as you go or when you have a total of four sampling containers.
9. Finally, record additional information on the attached reporting sheet.

We rarely find honeybees, bumblebees, or a rare group of bees in the genus *Colletes*. In addition, many other floral insect visitors do not visit pan traps which means that pan traps are only a part of how we document bee diversity. Our team extensively nets insects from

flowers throughout the area multiple times during the year. But we cannot be everywhere all the time so your pan trapping information is an invaluable piece to how we document bee diversity in the Chihuahuan Desert.

## Chihuahuan Bee Biodiversity Initiative Data Sheet

*Must be Consistent, Trap Every Four Weeks/once a month!*

<b>Your Name/Phone</b>	<b>Your Address</b>	<b>Sample Location if different from address</b>

Sampling Month	Start Date and Time	Flowers Nearby <small>(Near what type of plants, or unknown)</small>	Weather Conditions <small>(sunny, cloudy, windy, breezy, etc.)</small>	Approx. Noon Temp.	Photo of the Traps	Soil Type <small>(sandy, clay, unknown, etc.)</small>	Notes <small>(Loss of bowl during sampling, describe area, anything unusual...)</small>
					<input type="checkbox"/> Y <input type="checkbox"/> N		
					<input type="checkbox"/> Y <input type="checkbox"/> N		
					<input type="checkbox"/> Y <input type="checkbox"/> N		
					<input type="checkbox"/> Y <input type="checkbox"/> N		