Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (please turn this in at the end of lab)

**Lab 8: Plant-Pollinator Data Analysis**

Reflecting on the data collection and project goals:

1) Describe how you choose a site for the floral visitor observation activity.

2) What were the most common floral visitors to your plot?

3) Did you observe any beetles during your observation? If so, did they appear to be true pollinators or were they eating the flower petals (florivores)?

4) Do you think your observation area is high or low quality pollinator habitat? What elements of the plot and surrounding area lead you to conclude that?

5) As we covered in class, this lab activity is part of a larger research project. What is the hypothesis of that project? And why can’t we test that hypothesis with our class data alone?

Data entry:

1. Please go to [this Google sheet](https://drive.google.com/file/d/18fGIdVbshXyYe-qm47SQyr2XRDK7sR0R/view?usp=sharing) (link in Moodle, too) and enter in your site data and observation data. You’ll notice that I’ve already entered my data (I’m student 112) and some of the site values for everyone.
2. Once everyone has entered their data, please download or make your own copy of the Google sheet so we’re not all working with the same online file at once!

Data analysis and questions:

1. Plot a plant-pollinator interaction network for just your 2 sites combined (this is mostly just for practice). Follow the directions on the sheet. Here’s what mine looks like (note that I wrote the number of floral units and the total numbers of each type of floral visitor):



6

25

2

1

1. Next, let’s combine our class data into a single plant-pollinator interaction network plot. Doing this will involve sorting the data by flower type and binning it. I’ll talk us through how to do it, but I’d like everyone to generate their own plot (even though we should all end up with the same plot).
2. Which flower type was associated with the most floral visitors (highest number of individual visitors)? What floral traits (e.g., color, size) does this flower type have?
3. Which flower type was associated with the most diverse set of floral visitors (highest number of morphospecies as visitors)? What floral traits (e.g., color, size) does this flower type have?
4. Anything else noteworthy in our results?

Data analysis and questions for another dataset:

As I’ve mentioned, many groups of students around the country are participating in this project, and one of them is Kalamazoo College. [Here you’ll find a link](https://drive.google.com/file/d/1SOGUyzUXXpUkS_WKhQdkp5OnEPAOE1qa/view?usp=sharing) to data they’ve collected. Please download this file onto your laptop. One benefit of this dataset is it includes multiple sites from rural, urban, and suburban areas. We will make three interaction network plots – one for rural, one for suburban, and one for urban. I will assign you just one of these area types, and when we’re done we can compare everyone’s plots.

Unlike our class dataset for which we only had four different flower species (and we were able to ID these species together using iNaturalist), the Kalamazoo data includes a broad diversity of floral traits collected from various regions by students working on their own. Because we our drawing network interaction plots by hand, let’s keep things simple and focus on **color** as a floral attribute. In other words, our plots will show the interactions between the various floral colors and insect morphospecies.

1. Make a copy of the “observation data” tab and rename it “rural” (or urban or suburban, which ever you’re doing).
2. Look at the site data tab. It should be sorted by area type. Note which student ID codes correspond to your area type.
3. Go back to the tab you made a copy of (e.g., “rural”) and highlight only the rows corresponding to your area type, based on student ID code. Delete all of the other rows. The idea is to have only rural (or suburban or urban) data on this sheet.
4. Sort and bin the data focusing on floral color as an attribute so that you can then generate an interaction network plot for your area type.
5. Compare your plot to the other student(s) who did you same area to ensure it’s the same.

1. Which floral color was associated with the most floral visitors (highest number of individual visitors) for your area type?
2. Which floral color was associated with the most diverse set of visitors (highest number of morphospecies as visitors) for your area type?

1. Now compare plots for all three area types. We hypothesized that urban areas would have fewer and less diverse floral visitors. What did the Kalamazoo class find across everyone's observations? How does the interaction network structure vary across the rural-urban gradient?