

Bio Diversity - Who Likes Flowers?

Samacheer, Science, Class - VIII , Chapter - 1, Term - 3

The Big Picture

The idea of this experiment is to attract pollinator insects with cultivated or artificial flowers. As various species of pollinators have co-evolved with species of flowering plants, the insects have developed preferences for color, scent and shape. We'll take advantage of those preferences and see if we can find patterns in visiting insects.

Preparations

Weather is an important consideration for this experiment. Pollinators only fly when there's no rain, and it is warm enough and not too windy. You'll need some flexibility to work around rainy days.

You'll need a lot of flowers, either cultivated flowering plants, or artificial ones. If you use living flowers, you'll need a place to put them out on the school grounds, either planted or in pots or flats. The point of having live plants out on the grounds the whole time is to allow insects and other animals to colonize the plants (e.g. aphids, ants, spiders, ladybird beetles). The other option is to make artificial flowers. These can be very simple: flat disks or inverted cones of construction paper will be enough to attract insects, they should be at least 8 cm across. You'll want at least 7 flowers per student, with colors and shapes depending on their questions. More flowers will always be better.

This experiment will require students to identify a number of flying insects, visually (very low accuracy) or by catching them and examining them up close (much better). Some of the

pollinators (bees, wasps) that will come can sting, and some of the flies that will come are bee-mimics, with bright yellow and black stripes. Students can handle these insects safely in nets, but you should encourage them to work on quiet observation skills, so catching them will not always be necessary. Over enthusiastic netters are liable to wipe out flowers.

(Students who are allergic to bee-stings should not be allowed to catch or handle any flying insects).

Materials

Whether living or artificial, you'll probably need more than one color of flower.

The three best options are blue/dark purple, red/pink, and yellow/white.

In addition to the flowers, insect nets and the other collecting gear.

For "nectar," a solution made from one part sugar or honey to 6 parts warm water will do. If you want to vary it, this concentration can be halved or doubled.

What to Expect

We're not sure what will be flying during the time of the experiment, but bumblebees, other small solitary bees, honeybees, many kinds of flies (including some bee-mimics), small stingless wasps, ants (crawling up from the ground) and butterflies are all possible.

Bees tend to favor blue/purple and yellow flowers, and aren't sensitive to red. Flies are

attracted to white, yellow, or pink, but some will land on any flower. Some butterflies also are broadminded, but many prefer yellow or blue flowers.

Setting Up Our Bio Diversity Project - Who likes flowers?

1. Flowers are loved by many species of invertebrates for the sweet nectar inside. While they are eating, it is possible to get a peek at many aspects of their lives. These include what they eat, what colors they like, what other invertebrates they associate with, what they are scared of, exactly what they look like and much more. Your class will be looking at how real or student-made flowers affect the abundance and richness of the animals in the schoolyard.

2. Read the following experimental questions that match your experimental setting.

a) Is there a higher abundance of animals attracted to paper flowers with “nectar” than paper without “nectar”? (Paper flowers only)

b) Is there a higher abundance of animals attracted to paper flowers with a “nectar” of high sugar concentration compared to one with low sugar concentration? (Paper flowers only)

c) Does the sugar concentration of the “nectar” affect the richness of animals visiting? (Paper flowers only)

d) Does the size of the flower patch affect the abundance of animals seen?

e) Is there a difference in the richness of animals attracted to flat versus funnel shaped flowers?

f) Does the shape of the flowers (flat versus

funnel shaped) affect the abundance of animals seen?

g) Does the amount of time the plant is in the schoolyard affect the richness of animals that visit the flowers?

h) Is the abundance of animals affected by the kind of plant you are observing?

3. Your experimental question is one of two types. Circle A or B for your question below.

- Does your experimental question look at changes over time?
- Does your experimental question compare two set-ups?

If you chose A, answer the questions in A below. If you chose B, answer those questions.

A	
✓	How many times will you collect data?
✓	When will you collect data?
✓	What materials do you need to set up the experiment?
✓	Where will you set up your experiment?

B	
✓	What will you compare?
✓	What is the goal of making this comparison?
✓	What materials do you need to set up the experiment?
✓	Where will you set up this comparison?

4. You will be either counting numbers of animals (Abundance) or identifying kinds of animals (Richness). Circle the type of data you will be collecting:

- Abundance: Counting numbers of animals
- Richness: Identifying kinds of animals

Abundance	Richness
<ol style="list-style-type: none"> 1. What will you count? 2. What is the goal of counting? 3. What equipment will you use? 4. How will you record the data that you collect? 5. In addition to counting, you will need to identify the animals that you are counting. 6. What equipment will you use to do this? 	<ol style="list-style-type: none"> 1. What type of things will you identify? 2. What is the goal of identifying? 3. What equipment will help you? 4. When you identify something, how will you record that information? 5. In addition to identifying animals, you will need to count them. What equipment will you use to do this?

Reference: http://www.biokids.umich.edu/research/biokids/downloads/exp_7_print.pdf

We will be meeting at the Teacher Resource Centers every Saturday to discuss project ideas. You can join this project on the website – azimpremjifoundationpuducherry.org; Facebook : <https://www.facebook.com/groups/Thisaimaani/>