

## Pollination

## Teacher's Guide

**Subject:** Integrated Science (Life; Earth-Space)

**Topic:** Pollination

**Summary:** Students will examine different types of pollinators and the plants they pollinate. The students will determine the specific physical properties of the plants that attract the pollinators.

After completing the field lab, students will be able to:

- Objective(s):**
1. Identify and describe the difference between wind and animal pollination
  2. Determine the most likely pollinators based on flower shape, color and smell
  3. State the disadvantage for a plant to have only one specialized pollinator

**Ecosystem(s):** Pinelands? Hammocks? or Scrub?

### Equipment:

- Tape measure
- Small ruler
- Magnifying glass
- Measuring rod
- GPS receiver
- Quadrat

### Background:

- Vocabulary: flower parts, pollination, fertilization,
- Reference Material: <http://en.wikipedia.org/wiki/Pollination>;  
[http://www.pollinator.org/Resources/USPSsr06\\_048.pdf](http://www.pollinator.org/Resources/USPSsr06_048.pdf);
- Equipment Training: GPS

### Procedure (Engage; Explore; Explain)

1. Engage the students by asking a specific question that gets to the heart of the activity: Some plants disperse their pollen simply by exposing it to the wind, others have developed associations with pollinators that systematically move to similar flower types in search of nectar thereby pollinating the plant. What advantage might one approach have over the other? Use the students' answers to ascertain what they already know, clarify any misconceptions, and then ask them to formulate their own hypothesis relating to their own expectations of the outcome of the lab.
2. Fill-in your own hypothesis on the top of the student data sheet.
3. In your pre-determined area, complete the observations and measurements identified in the student data sheet.
4. After completing the lab, allow the students to answer the discussion questions as a group and explain their answers relating them to the concepts, processes and skills associated with the activity. Students should record their answers individually. At this time, facilitators can introduce/explain the specific concepts and explanations in a formal manner.

### Sunshine State Standards:

**Science:** SC.D.2.3.2; SC.F.1.3.1, 7; SC.F.2.3.1, 2, 3; SC.G.1.3.2,3; SC.G.2.3.3.4; SC.H.1.3.4, 5, SC.H.2.3.1

**Language Arts** LA.A.1.3.3; LA.C.1.3.1, 4

**Mathematics:** MA.A.3.3.3

**Social Studies:** SS.A.6.3.2; SS.B.2.3.6, 9



**Pollination****Student Data Sheet****General Information**

Full Name:		Date:	
School (teacher):		Time:	
Latitude:		Longitude:	

**Student Hypothesis and Rationale**

If a flower is extremely small, then we would expect the pollinator associated with that flower to be (Circle one: large or small) because \_\_\_\_\_

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**Field Observations/Measurements/Data**

Plant	Are Flowers Present? (Y/N)	Size of Flower (dimensions)	Color(s) of Flower	Shape of Flower	Presence of Pollinators (observe each plant for five minutes and note all pollinators and estimate their overall size)
[Wind pollinated]		Widest opening:  Depth:			
[Insect pollinated]		Widest opening:  Depth:			
[Water pollinated]		Widest opening:  Depth:			
[Animal pollinated]		Widest opening:  Depth:			

## Pollination

## Assessment

1. Which plant had the greatest number of pollinators?

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2. Did plants with larger flowers have larger pollinators?

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3. Do your data support your hypothesis? Whether your hypothesis is supported or not, what can you infer from your observations, measurements, and results?

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4. What advantage might a plant that has many different pollinators have over one that is very specialized with only one specific pollinator?

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5. Farmers rely on pollinators to help ensure the fertilization of certain crops. How might farmers accelerate or magnify the pollination process? How might this be affected by their use of insecticides?

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## Portfolio Journal Prompt

Flowering plants and pollinators have coexisted for millions of years. Think about the factors that may have led to the “co-evolution” of a flower and a pollinator. Before you begin writing think about which came first the flower or the pollinator. Try to imagine the very first flower and pollinator partnership and describe how you think they found each other.