



**Lesson Developed by:**

**Lesson 2: Signs & Signals**

Follows “The Power of Pollination” Lesson

**Lesson Description:** Students will learn the variety of ways that flowers send messages to pollinators to ensure their own reproduction.

**Concepts:** How flowers communicate to pollinators.

**Estimated Time:** Two 45-60 minute sessions.

**Materials & Essential Files:**

- Secret Signs & Signals PowerPoint file - (~18 slides; 45 minute “plug and play” presentation with script in notes. Please note: the presentation includes 6 slides from the Power of Pollination lesson for review purposes).
- Orchard Activity Worksheet - students record their general observations (written notes and sketches) about flowers and insect visitors on a simple datasheet, and draw conclusions about their observations.

**Vocabulary:** Terms covered in lesson 1 plus: nectar guides, nectar rewards, fragrance, attractants, ultraviolet

**Procedures:**

*Day 1:* 45-60 minutes. PowerPoint presentation (18 slides): allow 45+ minutes; includes ample time for Q&A/discussion and sharing time (students share experiences and observations)

*Day 2:* 60 minute activity outdoors in the school orchard (April through May). Orchard activity (see worksheet). Allow 15 minutes of transition time (in and out of building), 30 minutes for outdoor lesson, and 15 minutes for Q&A/discussion, and sharing time (students share experiences and field observations) at the conclusion of the activity.





Day 2 - Outdoor Activity: Observations in the Orchard (worksheet)

Activity should take place on a sunny, relatively warm day between April 1st through May 30th (when trees are blooming). Aim for as late in this calendar window as possible (because bee activity will be higher), but take care not to miss the bloom period. Similarly, the warmer the temperatures, the higher the pollinator activity will be.

1. Begin by briefly reviewing what was learned in Day 1 (the Secret Signs and Signals presentation).
2. Ask the students to explain pollination and why it is important.
3. Ask the students to describe interactions between insects and flowers.
4. Break the class up in to pairs/groups, if desired.
5. Pass out worksheet.
6. Ask your students to walk around the orchard trees and look for bees or other insects visiting flowers/blooms on orchard trees.
7. Ask students to pick a flower to study (will draw the flower on their worksheet and describe the flower shape, color, and any obvious anatomical parts that they see).
8. Students follow worksheet prompts....
  - Which flowers are visited more than others?
  - How do the insects behave (or "act") when they are on the flowers? What are they doing?
  - How long do they spend at each flower?
  - Why do you think they spend longer at one flower versus another?

**Standards:**

NGSS DCIs (Core ideas linked to lesson):

PS2B – Types of Interactions

LS1A – Structure and Function

LS2A – Interdependent Relationships in Ecosystems

LS3B - Variation of Traits

LS1B – Growth & Development of Organisms

LS4B – Natural Selection

ESS3A – Natural Resources

Literacy Outcomes:

Students will be able to demonstrate what they learned with the following statements:

- I can explain at least two different ways that flowers communicate to insect pollinators (flower color, shape, scent, etc.).
- I can explain *why* flowers communicate to insects.



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