



## Powerful Pollinators

*Meets 2<sup>nd</sup> Grade Next Generation Science Standards*

*California Visual Art Standard 2.4 - Create a painting or drawing, using warm or cool colors expressively.*

*Taking It Further - California Visual Art Standard 2.2 - Demonstrate beginning skill in the use of art media, such as oil pastels, watercolors, and tempera.*

**Animal to Draw for Art Contest** – a bee or a butterfly pollinating a California poppy flower

**Writing prompt for the sentence of the back of the student's drawing** – Describe what your bee or butterfly is doing.

**Lesson Objective** – To understand the concept of pollination and the roles of a pollinator. Invertebrates like bees and butterflies are important to the plant life cycle.

**Time** – 15-20 minutes

**Background** – Plants rely on the wind and pollinators to help them move their pollen to aid in the plant reproduction process. Pollinators, especially invertebrates like bees, are key components to the pollination process. The bees move from flower to flower collecting nectar for their own food source, but are also collecting pollen on their body. When the pollen from their body reaches another flower, they are cross-pollinating. Cross-pollination is important because it creates new flowers and seeds. Many of our own food resources come from bees pollinating including: apples, berries, cucumbers, cantaloupes, and almonds.

### **Vocabulary:**

Pollination – the act of moving pollen from an anther to a stigma

Anther – the part of the stamen that has the pollen

Stigma – the part of the pistil where the pollen grows

Flower – tools that plants use to make seeds

Pollinator – any animal, including insects, which transfer pollen from plant to plant

Pollinator Syndrome – plants attract certain pollinators to their flowers with different coloration, shapes, odors, and more

Cross-pollinating – a carrier that moves pollen from one flower to another flower (wind or pollinators)

### **Materials** –

- Color spot stickers (for inside the classroom) or chalk (for outside)
  - Colors needed: red, yellow, green, blue, purple, white

**Directions** – This activity should be done as a whole class, like a game!

1. Explain to the students that pollinators like beetles, butterflies, and bees are attracted to certain colored

flowers to collect nectar. This allows the plants to rely on certain pollinators to help with the pollination process. (pollinator syndrome-refer to vocabulary list)

2. Show the students photos of pollinators with their preferred plants. See if the students can discover a pattern or what colors these animals prefer.
3. Explain to the students that pollinators are important because they help provide most of our food that we receive from plants.
4. Explain to the students how the game works. It is called “**Beetle, butterfly, bee.**”

#### **Game Procedure – “Beetle, butterfly, bee”**

1. Prior to the game, place different color spots on the ground around the classroom or outside (use chalk); you will need multiple of each color because students will be “flying” to these spots. You can also vary the size of the spots so students can share the spots.
2. Show the students the different color spots around the classroom or outside. These are the spots they will need to travel to.
3. Let them know the colors that beetles, butterflies, and bees are attracted to. (beetles – green, butterflies – red and purple, bees – yellow, blue, and white)
4. Every time you announce either “beetle” “butterfly” or “bee,” the student must “fly” over to the correct color that animal prefers. They must move to a new spot every time you call a new pollinator.
5. You can continue this game for as long as you please. See how the students’ progress with speed as the game continues.

**Questions for discussion** – Ask them what color each pollinator preferred? Why do you think it is important that they are attracted to different colored plants? Why is pollination important? What do pollinators provide for us? What might harm pollinators? What can we do to help pollinators to continue pollinating plants? In addition to pollination, what else do plants require to grow? What are other ways you could think of for dispersing seeds or pollinating plants? What are the different requirements of a pollinator compared to a plant?

**Website/books/other resources** - *Insect Pollinators (First Step Nonfiction)* by Jennifer Boothroyd

*From Farm to Table Almonds* by Kathy Coatney

*From Seed to Plant* by Gail Gibbons

*What Is Pollination? (Big Science Ideas)* by Bobbie Kalman

[https://www.fs.fed.us/wildflowers/pollinators/What\\_is\\_Pollination/index.shtml](https://www.fs.fed.us/wildflowers/pollinators/What_is_Pollination/index.shtml)

**Taking it Further** – As a class, discuss not only the color features pollinators are attracted to, but the shapes, odors, and other features of plants that are also used as signals. You can also have the class think of other pollinators that are not insects. Did you know that there are mammals and birds that are pollinators?! (Examples include hummingbirds and bats.)

**Conservation Action** – Insect pollinators need a habitat that provides them with a sufficient amount of nectar. You can help provide a healthy habitat for them by planting native plants with a good source of pollen or nectar and that are shaped for insects to land on. A few examples of native plants in San Francisco are California poppies and silver lupine. Look into planting these in your family yard space, community garden, or maybe at your school.

**Source** - [https://www.fs.fed.us/wildflowers/pollinators/What\\_is\\_Pollination/index.shtml](https://www.fs.fed.us/wildflowers/pollinators/What_is_Pollination/index.shtml)

<https://www.fs.fed.us/wildflowers/pollinators/animals/bees.shtml>

[https://www.fs.fed.us/wildflowers/pollinators/What\\_is\\_Pollination/syndromes.shtml](https://www.fs.fed.us/wildflowers/pollinators/What_is_Pollination/syndromes.shtml)

<https://www.fs.fed.us/wildflowers/pollinators/friendlypractices.shtml>

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/gardeners/>

<https://www.nrdc.org/sites/default/files/bees.pdf>