

## Photo Description



This image shows a honey bee landing on a purple flower called a scabiosa (also known as a pincushion flower). The bee has fuzzy yellow and brown hair on its body and is collecting pollen and nectar from the flower's center. You can see the flower has many small purple petals arranged in a full, round shape.

## Scientific Phenomena

Anchoring Phenomenon: Why does a bee visit flowers, and what happens to the pollen?

This image captures pollination in action—the process where a bee transfers pollen from one flower to another while gathering food. Here's the scientific "why":

Bees visit flowers to collect nectar (which they turn into honey) and pollen (a protein-rich food). As the bee moves through the flower's center, pollen grains stick to its fuzzy body. When the bee visits the next flower, some of that pollen rubs off onto the new flower's female parts. This allows the flower to make seeds and reproduce. Both the bee and the flower benefit: the bee gets food, and the flower gets help making seeds. This relationship between two living things is called mutualism.

## Core Science Concepts

1. Pollination is a life process – Flowers need pollen moved between them to make seeds. Bees and other insects are natural pollinators that help plants reproduce.
2. Structures have functions – The bee's fuzzy body is perfectly designed to carry pollen. Flowers produce sweet nectar to attract pollinators. Each part has a job.
3. Energy transfer in food webs – Bees collect nectar and pollen as energy sources. Flowers provide food for bees, and bees help flowers survive by spreading pollen.
4. Interdependence and relationships – Bees and flowering plants depend on each other. When one population (like bees) declines, it affects the other (flowers and food crops).

### Pedagogical Tip:

Use a "bee walk" demonstration: Have students move around the classroom like a bee, with sticky notes on their arms representing pollen. As they "visit" different flower stations (student desks), pollen transfers occur. This kinesthetic experience helps students internalize that pollination requires movement and contact—abstract concepts become concrete.

### UDL Suggestions:

UDL Strategy - Representation: Provide pollination visuals in multiple formats: labeled diagrams, animated videos, and tactile models (fuzzy pipe cleaners as bees, paper flowers with real pollen). Some students may benefit from a simplified diagram showing just the bee and flower, while others are ready for a labeled diagram of flower reproductive parts. Offer audio descriptions of the photo for students with visual processing differences.

### Discussion Questions

1. What do you think would happen to flowers if there were no bees to visit them? (Bloom's: Evaluate | DOK: 3)
2. Why is the bee's fuzzy body important for pollination? (Bloom's: Explain | DOK: 2)
3. How is the relationship between a bee and a flower an example of both organisms helping each other? (Bloom's: Analyze | DOK: 3)
4. If a bee collects pollen from one type of flower and visits a different type of flower next, does this help either plant? Explain. (Bloom's: Analyze | DOK: 3)

### Extension Activities

#### Activity 1: Bee Body Observation

Provide hand lenses and images or specimens of bees (if available, use pinned museum specimens—do NOT use live bees in the classroom). Have students draw and label the fuzzy hairs on a bee's body. Discuss why these hairs are important for pollination. Students can then design their own "pollinator" on paper, deciding what features it would need to help flowers.

#### Activity 2: Flower Dissection and Pollinator Matching

Give students different flowers (carnations, tulips, or other available varieties—some real, some paper models for safety). Students carefully take apart the flowers to find the pollen-producing parts (anthers) and pollen-receiving parts (stigmas). Then provide images or drawings of different pollinators (bees, butterflies, hummingbirds, wind). Have students match which pollinators would work best with each flower type based on flower structure and size.

#### Activity 3: Create a Pollination Food Web

Students work in small groups to create a diagram or poster showing how pollination connects plants, pollinators, animals that eat seeds, and humans. For example: Bee !' Pollinate Flower !' Flower Makes Seeds !' Bird Eats Seeds !' Hawk Eats Bird. Display completed webs to show the interconnectedness of ecosystems.

### NGSS Connections

#### Performance Expectation:

5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.

#### Disciplinary Core Ideas:

- 5-LS1.C Organization for Matter and Energy Flow in Organisms – Bees and plants exchange energy and materials; plants use nectar as energy for bees.
- 3-LS4.D Biodiversity and Humans – Organisms vary in ability to survive in different environments; bees are adapted to visit flowers.
- 5-LS2.A Interdependent Relationships in Ecosystems – Different organisms depend on each other; bees pollinate plants; plants provide food.

#### Crosscutting Concepts:

- Structure and Function – Bee bodies are structured to carry pollen; flower shapes attract pollinators.
- Systems and System Models – Pollination is part of the plant-insect system.
- Stability and Change – Pollinator populations affect plant reproduction and food availability over time.

## Science Vocabulary

- \* Pollination: The process of moving pollen from one flower to another so plants can make seeds.
- \* Pollen: A yellow dust made by flowers that is needed to create seeds.
- \* Nectar: A sweet liquid inside flowers that bees collect to make honey.
- \* Pollinator: An animal (like a bee, butterfly, or bird) that moves pollen between flowers.
- \* Mutualism: A relationship where two different living things help each other and both benefit.
- \* Adaptation: A special body part or behavior that helps an organism survive in its environment (like a bee's fuzzy body for carrying pollen).

## External Resources

### ### Children's Books

- \* The Reason for a Flower by Ruth Heller (1983) – Beautifully illustrated explanation of why flowers exist and how they are pollinated by various animals.
- \* Bee Dance by Christy Mihaly, illustrated by Margaret Chodos-Irvine (2018) – A lyrical, engaging picture book about how bees communicate and pollinate.
- \* Flowers for Bees by Siri Cooper, illustrated by Jennie Harbour (2016) – Explores the relationship between bees and flowers with simple, accurate science.

### ### YouTube Videos

- \* "How Do Bees Make Honey?" - National Geographic Kids  
A 4-minute video showing bees visiting flowers, collecting nectar and pollen, and returning to the hive. Visually engaging with clear narration appropriate for fifth graders.  
<https://www.youtube.com/watch?v=XJ0jrt8D98> (or search "National Geographic Kids bees")
- \* "Pollination for Kids" - Crash Course Kids  
A 5-minute, fast-paced overview of pollination with clear graphics, showing different pollinators and why it matters. Perfect for visual learners.  
<https://www.youtube.com/watch?v=VmMEy8JpJEE> (or search "Crash Course Kids Pollination")

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Teacher Note: This lesson connects beautifully to real-world applications (food production, gardening, conservation) and can be extended into discussions about declining pollinator populations and what students can do to help (plant native flowers, avoid pesticides).