

Photo Description



This image shows a honeybee landing on a purple flower called a scabiosa (also known as a pincushion flower). The bee's body is covered in yellow pollen grains as it drinks nectar from the flower's center. You can see the bee's long, fuzzy body and wings clearly in the bright sunlight.

Scientific Phenomena

Anchoring Phenomenon: Pollination—the transfer of pollen from one flower to another by animals (in this case, a bee).

Why This Happens: Flowers need pollen to make seeds and new plants. Bees visit flowers to collect nectar (a sweet liquid they use for food), and as they move from flower to flower, pollen sticks to their fuzzy bodies. When the bee lands on the next flower, some of that pollen rubs off onto it, allowing the flower to be pollinated. This is a mutually beneficial relationship: the bee gets food, and the flower gets pollinated so it can make seeds.

Core Science Concepts

1. Pollination is a process in plant reproduction. Pollen must move from the male parts of a flower to the female parts for seeds to develop. Bees and other animals are important pollinators.
2. Adaptations help organisms survive and reproduce. Bees have fuzzy bodies that naturally catch pollen, and flowers have bright colors and sweet nectar to attract pollinators. These features evolved together because they help both species.
3. Energy and matter flow through ecosystems. Bees depend on nectar (energy) from flowers for food. In return, they transport pollen (matter), helping plants reproduce. This is an example of a food chain and a symbiotic relationship.
4. Diversity in nature serves important functions. Many types of pollinators (bees, butterflies, hummingbirds, beetles) ensure that different plants get pollinated, supporting biodiversity.

Pedagogical Tip:

Use this image as a "hook" at the beginning of your unit. Ask students, "What is the bee doing? Why do you think the bee visits flowers?" before revealing the answer. This activates prior knowledge and builds curiosity. Then, create a simple demonstration by having students rub their hands in flour and touch a paper flower to model how pollen sticks to the bee's body.

UDL Suggestions:

Representation: Provide a labeled diagram of a flower's parts (stamen, pistil, nectar) alongside the photograph so visual learners can connect the image to flower anatomy. Consider offering an audio description for students with visual impairments. **Action & Expression:** Allow students to choose how they demonstrate understanding—through drawing, writing, drama (acting as a bee), or building a 3D flower model. **Engagement:** Connect pollination to food students eat (apples, almonds, cucumbers) to show real-world relevance and increase motivation.

Discussion Questions

1. What do you think would happen to flowers if there were no bees to visit them? (Bloom's: Analyze | DOK: 2)
2. Why do you think flowers are colorful and smell sweet? (Bloom's: Infer | DOK: 2)
3. How do both the bee and the flower benefit from this relationship? Explain your thinking. (Bloom's: Understand | DOK: 2)
4. If you were a flower, what would you do to attract a pollinator to visit you? (Bloom's: Create | DOK: 3)

Extension Activities

1. Flower Dissection & Observation: Provide students with large flowers (carnations or tulips work well) and hand lenses. Have them carefully take apart the flower and identify the stamen (pollen-producing part) and pistil (female part). Students can observe pollen grains, draw their observations, and discuss where pollen would go if a bee visited.
2. Pollinator Habitat Design: In small groups, students design and create an attractive flower garden on paper or using craft materials to "attract pollinators." They must include flowers that bloom at different times, provide nectar, and explain their design choices. This combines art, science, and engineering thinking.
3. Bee Dance Simulation: Teach students about the "waggle dance" that honeybees use to communicate the location of flowers. Have students act out the dance pattern themselves, then discuss why communication is important for pollinators finding food sources. This connects to animal behavior and information transfer.

NGSS Connections

Performance Expectation:

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

Disciplinary Core Ideas:

- 4-LS1.A (Structure and Function)
- 4-LS4.C (Adaptation)

Crosscutting Concepts:

- Structure and Function
- Cause and Effect
- Interdependence of Science, Engineering, and Technology

Science Vocabulary

- * Pollination: The process of moving pollen from one flower to another so the flower can make seeds.
- * Pollen: Tiny yellow grains made by flowers that contain the male cells needed to make seeds.
- * Nectar: A sweet liquid inside flowers that bees and other insects drink for energy.
- * Pollinator: An animal (like a bee, butterfly, or hummingbird) that carries pollen between flowers.
- * Adaptation: A special feature or behavior that helps an animal or plant survive and reproduce in its environment.
- * Stamen: The male part of a flower that makes pollen.

External Resources

Children's Books:

- The Bee Tree by Patricia Polacco (a story about a beekeeper and the importance of bees)
- Flowers Are Calling by Rita Gray (introduces various pollinators and their relationships with flowers)
- From Flower to Bee by Lisa Westberg Peters (simple rhyming text about pollination)

YouTube Videos:

- "Why Bees Are Important | National Geographic Kids" – A 4-minute overview of bee pollination and why bees matter to ecosystems. <https://www.youtube.com/watch?v=VtKbiyyVZEc>
- "The Waggle Dance of the Honeybee" – A 3-minute animated explanation of how bees communicate about flowers. https://www.youtube.com/watch?v=f7V_wk-8PuE