

Photo Description



A small insect with orange and black coloring sits on a white daisy flower with a bright yellow center. The insect has long, thin legs and appears to be feeding or resting on the flower petals. This shows how insects and flowers work together in nature.

Scientific Phenomena

The anchoring phenomenon shown here is pollination - the process where insects visit flowers to collect nectar or pollen for food, and accidentally transfer pollen between flowers. This happens because flowers produce sweet nectar that attracts insects, and as the insect moves around the flower to feed, pollen grains stick to its body. When the insect visits the next flower, some pollen rubs off, helping plants reproduce. This mutually beneficial relationship has evolved over millions of years.

Core Science Concepts

1. Mutualistic Relationships: Both the insect and flower benefit - the insect gets food (nectar/pollen) while the flower gets help with reproduction through pollination.
2. Animal Behaviors for Survival: Insects exhibit feeding behaviors that help them obtain energy and nutrients needed for survival and growth.
3. Plant Reproduction: Flowers are plant reproductive structures that use colors, scents, and nectar to attract pollinators.
4. Interdependence in Ecosystems: Plants and animals depend on each other for survival - many plants need insects for pollination, while insects need plants for food.

Pedagogical Tip:

Use the "Think-Pair-Share" strategy when introducing pollination. Have students first think individually about why insects might visit flowers, then discuss with a partner, and finally share ideas with the class. This builds understanding gradually.

UDL Suggestions:

Provide multiple ways to represent pollination concepts: use physical gestures (students can "fly" like insects between flower stations), visual diagrams, and real flower/insect specimens or high-quality photos to accommodate different learning preferences.

Zoom In / Zoom Out

Zoom In: Microscopic Level

If we could shrink down and look very closely at the insect's legs with a microscope, we would see tiny hairs covering them! These hairs are so small you can't see them with just your eyes, but they're perfect for catching pollen grains. Pollen is also much tinier than it looks—each pollen grain is smaller than a grain of sand. When the insect walks on the flower, these microscopic hairs trap the pollen so it can be carried to the next flower.

Zoom Out: Ecosystem Level

This single flower and insect interaction is just one tiny part of a huge community of living things. In a meadow or garden, there are hundreds of different flowers, insects, birds, and other animals all depending on each other. When pollinators visit flowers, they help create seeds that grow into new plants. Those plants provide food and shelter for more insects and animals. Even humans benefit because many of the fruits and vegetables we eat depend on pollination!

Discussion Questions

1. What do you think the insect is doing on the flower, and why? (Bloom's: Analyze | DOK: 2)
2. How might this flower be different if no insects ever visited it? (Bloom's: Evaluate | DOK: 3)
3. What features of the flower do you think attract insects? (Bloom's: Apply | DOK: 2)
4. If all the insects disappeared from an area, what might happen to the flowers? (Bloom's: Synthesize | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Insects hurt flowers when they walk on them."

Clarification: While insects walk on flowers, they don't damage them in a harmful way. In fact, insects help flowers by moving pollen around. The flowers are actually designed to have insects walk on them! The insects and flowers help each other, which is a partnership.

Misconception 2: "All insects that visit flowers are bees."

Clarification: Many different insects visit flowers, not just bees! Butterflies, beetles, flies, and other insects also drink nectar and help with pollination. The insect in this photo is a beetle. Each type of insect has its own special way of visiting flowers.

Misconception 3: "Flowers make nectar just for insects to eat."

Clarification: Flowers make nectar as a way to attract insects to visit them. It's like the flower is offering the insect a reward! In exchange, the insect helps the flower by moving pollen to other flowers so the flower can make seeds and new plants.

Extension Activities

1. Flower Investigation Station: Provide magnifying glasses and real flowers (lilies, sunflowers) for students to examine parts and look for pollen. Have them draw and label what they observe.
2. Pollinator Movement Simulation: Set up "flower stations" around the classroom with different colored paper flowers. Students act as pollinators, collecting small pieces of colored paper (pollen) that stick to cotton balls attached to their hands, transferring between flowers.
3. Design a Flower: Challenge students to create their own flower design that would attract pollinators, considering color, shape, and scent. Have them explain their design choices.

Cross-Curricular Ideas

Math Connection: Counting and Graphing Pollinators

Take students outside to observe flowers and count how many different insects visit them in 10 minutes. Record the data on a simple bar graph showing which insects visited most often. This connects data collection with the science concept of pollinator diversity.

ELA Connection: Pollinator Poetry and Writing

Have students write "cinquain" poems from the perspective of either the insect or the flower, describing what they see, feel, and do. Example: "Beetle / Landing softly / Sipping sweet nectar / Moving golden pollen / Helping flowers grow." This builds descriptive vocabulary while reinforcing science concepts.

Art Connection: Create a Pollinator Garden Mural

Students design and paint a large collaborative mural showing different flowers and insects interacting. They research colors, shapes, and sizes, then create their own versions. This combines artistic expression with scientific observation and reinforces understanding of plant-insect relationships.

Social Studies Connection: Pollinators Around the World

Explore how different cultures and regions have different pollinators. Compare insects that visit flowers in the United States to those in other countries (hummingbirds in Central America, specific beetles in Africa). This builds geographical awareness and appreciation for biodiversity across cultures.

STEM Career Connection

Entomologist (Insect Scientist) - Average Salary: \$63,000/year

An entomologist studies insects and how they live. They might observe beetles visiting flowers like the one in this photo, figure out which insects are helpful to gardens, or discover new types of insects. Some entomologists work outside in nature, while others work in laboratories. They help us understand insects and how to protect both the insects and plants we need!

Botanist (Plant Scientist) - Average Salary: \$65,000/year

A botanist studies plants and how they grow. They learn about flowers, how plants make seeds, and what helps plants survive. Some botanists study pollination by watching insects visit flowers and measuring how much pollen moves between plants. They might work in gardens, forests, or research centers to help protect plants and understand why flowers look and smell the way they do.

Beekeeper/Pollinator Farmer - Average Salary: \$45,000/year

A pollinator farmer raises insects like bees, butterflies, and beetles to help farmers grow food. They take care of the insects, make sure they have flowers to visit, and help move them to farms where crops need pollination. Without pollinators, we wouldn't have many fruits, vegetables, and seeds, so these workers are very important to making sure we have food to eat!

NGSS Connections

Performance Expectation:

- 3-LS4-3: Construct an argument that some animals form groups that help members survive

Disciplinary Core Ideas:

- 3-LS2-1: Being part of a group helps animals obtain food, defend themselves, and cope with changes
- 3-LS4-B: Environmental changes affect organisms and their habitats

Crosscutting Concepts:

- Cause and Effect: Students can identify that insects visiting flowers causes pollination
- Systems and System Models: The flower-insect relationship is part of larger ecosystem interactions

Science Vocabulary

- * Pollination: When pollen moves from one flower to another to help plants make seeds
- * Nectar: Sweet liquid that flowers make to attract insects
- * Pollen: Tiny yellow powder that flowers need to make new plants
- * Attract: To make something want to come closer
- * Reproduce: When living things make new babies or offspring
- * Interdependence: When different living things need each other to survive

External Resources

Children's Books:

- The Magic School Bus Plants Seeds by Joanna Cole
- The Reason for a Flower by Ruth Heller
- National Geographic Readers: Buzz, Bee! by Tori Kosara