

Photo Description



This image shows a tiny hummingbird frozen in mid-flight as it visits bright pink flowers. The hummingbird has a long, thin beak and is hovering in the air by beating its wings very, very fast. You can see three pink flowers at different stages, with the hummingbird moving between them to drink sweet nectar.

Scientific Phenomena

Anchoring Phenomenon: Why does the hummingbird hover in one spot while drinking from flowers?

Hummingbirds have evolved a unique ability to hover by beating their wings 50-80 times per second—far faster than other birds. This rapid wing movement creates lift in all directions, allowing them to stay still in the air. Hummingbirds need this skill because they feed on nectar from flowers, and hovering allows them to reach flowers at any angle or position. Their heart rate can reach 1,260 beats per minute to support this intense activity. This is an example of adaptation—special body features that help animals survive and find food.

Core Science Concepts

1. **Animal Adaptations:** Hummingbirds have special body features (fast wings, long beak, fast heartbeat) that help them survive and eat.
2. **Plant-Animal Relationships:** Hummingbirds drink nectar from flowers for food. In return, pollen sticks to the hummingbird and helps flowers make seeds (pollination).
3. **Energy and Movement:** Hummingbirds must eat many flowers every day because hovering and flying uses lots of energy from their bodies.
4. **Observation and Comparison:** Different flowers have different sizes, colors, and shapes that attract different animals.

Pedagogical Tip:

When teaching about hummingbirds, slow-motion video clips are powerful tools for Second Graders. Their brains cannot fully process wing beats at normal speed, so showing 10-20 second slow-motion clips helps them see what's actually happening. This bridges the gap between their observable world and scientific phenomena that occur too quickly for the naked eye.

UDL Suggestions:

UDL Implementation: Provide multiple means of representation by offering the lesson in visual (photos/videos), tactile (students flap arms to simulate wing speed), and verbal (teacher explanation) formats. Create a "nectar station" where students rotate through stations learning about different flowers—this gives kinesthetic learners a way to engage. For students with processing differences, provide a simplified vocabulary card with 2-3 key words illustrated with pictures.

Discussion Questions

1. What do you notice about how the hummingbird's body is different from other birds you know? (Bloom's: Remember | DOK: 1)
2. Why do you think the hummingbird needs to visit so many flowers? What is it looking for? (Bloom's: Infer | DOK: 2)
3. How does the hummingbird help the flowers, and how do the flowers help the hummingbird? (Bloom's: Analyze | DOK: 3)
4. If a hummingbird had short, fat wings instead of long, thin wings, what would change about how it flies and eats? (Bloom's: Evaluate | DOK: 3)

Extension Activities

1. Wing Flapping Experiment: Have students hold their arms out straight and flap them while you count to 10 at normal speed. Then show a slow-motion video of a hummingbird and count the wing beats in the same 10-second period. Students will be amazed at the difference! Use this to discuss why hummingbirds need so much energy.
2. Flower Observation Hunt: Take students outside to observe real flowers. Give each student or pair a simple data sheet with pictures of different flowers. Have them sketch or mark which flowers they see, estimate the size and color, and predict which animals might visit each one. Return to the classroom to discuss: "Which flowers would a hummingbird like?"
3. Plant-Animal Partner Collage: Provide magazines, scissors, and glue. Students cut out pictures of animals and plants, then glue them together to show "partners" (like hummingbird and flower, bee and flower, butterfly and plant). Write or draw how each pair helps each other. Display as a class poster.

NGSS Connections

Grade 2 Performance Expectation:

2-LS2-1: Plan and conduct an investigation to provide evidence that plants get the materials they need to grow chiefly from water and air.

Disciplinary Core Ideas:

- 2-LS1.A - All animals need food, water, and air to survive; hummingbirds eat nectar from flowers multiple times per day.
- 2-LS2.A - Plants depend on animals like hummingbirds for pollination to make seeds.
- 2-LS4.D - Animals have body parts and behaviors that help them survive (adaptations).

Crosscutting Concepts:

- Structure and Function - The hummingbird's long, thin beak is perfectly shaped to reach inside flowers.
- Energy and Matter - Hummingbirds need lots of food energy to power their fast wings.

Science Vocabulary

- * Nectar: Sweet liquid inside flowers that hummingbirds drink for food energy.
- * Pollination: When pollen from one flower gets to another flower, helping it make seeds.
- * Adaptation: A special body part or behavior that helps an animal survive and find food.
- * Hover: To stay in one place in the air without moving forward or backward.
- * Beak: The long, pointed mouth of a bird used to catch or reach food.

External Resources

Children's Books:

- Hummingbirds by Gail Gibbons (nonfiction picture book with clear diagrams)
- The Hummingbird by Kimberley Kurnizki (fictional story with accurate details)
- Flowers Feed Me by Shelley Rotner and Sheila Kelly (explores plant-animal connections)

YouTube Videos:

- "Hummingbird in Slow Motion" by BBC Earth – Shows real hummingbird wing beats slowed down so you can see every movement. Approximately 3 minutes. <https://www.youtube.com/watch?v=aCkKB5d4sKM>
- "How Do Hummingbirds Hover?" by National Geographic Kids – Age-appropriate explanation of hummingbird flight with animations. Approximately 5 minutes. <https://www.youtube.com/watch?v=H9CwJvFhZJc>

Teacher Note: This lesson works best as a 2-3 day unit, with Day 1 focused on observation and hummingbird adaptations, Day 2 on the plant-animal relationship, and Day 3 on extension activities. The slow-motion video should be shown on Day 1 to anchor student thinking!