

Photo Description



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Scientific Phenomena

This image represents the Anchoring Phenomenon of cicada emergence and adult behavior. Cicadas are insects that spend most of their lives underground as nymphs, feeding on tree root fluids. After 13-17 years (depending on species), they emerge from the soil, climb onto trees or plants, and molt into their adult form. The adult cicada shown here will live for only a few weeks, during which it focuses on mating and reproduction. Males produce loud calls using specialized organs called tymbals to attract females, creating the characteristic summer sounds many people associate with hot weather.

Core Science Concepts

1. Life Cycles: Cicadas demonstrate complete metamorphosis with distinct life stages - egg, multiple nymph stages, and adult
2. Animal Needs: Like all living things, cicadas need food (tree sap), water, air, and shelter to survive
3. Animal Behaviors: Cicadas exhibit specific behaviors like climbing, molting, and sound production for communication
4. Habitats: Trees and underground environments provide everything cicadas need to complete their life cycle

Pedagogical Tip:

Use real cicada shells (exoskeletons) if available in your area, as first graders learn best through hands-on exploration. The empty shells are safe to handle and help students understand that animals can grow out of their "skin."

UDL Suggestions:

Provide multiple ways to explore cicada sounds - play recordings, use musical instruments to mimic the rhythm, or have students hum at different pitches. This supports auditory learners while making the concept accessible to students with different learning preferences.

Zoom In / Zoom Out

1. Zoom In: At the cellular level, cicadas have specialized muscle cells in their tymbals that contract rapidly (up to 400 times per second) to create their loud mating calls. Their compound eyes contain thousands of individual photoreceptor cells that help them detect movement and navigate.

2. Zoom Out: Cicadas play important roles in forest ecosystems - their nymphs aerate soil while tunneling, adults serve as food for birds and other predators, and their mass emergence provides a significant nutrient pulse to the food web when they die and decompose.

Discussion Questions

1. What body parts help the cicada live on trees? (Bloom's: Analyze | DOK: 2)
2. How do you think the cicada uses its wings? (Bloom's: Apply | DOK: 2)
3. Why might cicadas need to make loud sounds? (Bloom's: Evaluate | DOK: 3)
4. What would happen if there were no trees for cicadas to live on? (Bloom's: Synthesize | DOK: 3)

Potential Student Misconceptions

1. Misconception: "Cicadas are dangerous and will hurt people"
Reality: Cicadas are completely harmless to humans - they don't bite or sting and are actually quite gentle insects
2. Misconception: "All insects live for the same amount of time"
Reality: Different insects have very different lifespans - cicadas live underground for many years, while some other insects live only days or weeks
3. Misconception: "Cicadas are the same as grasshoppers because they're both noisy"
Reality: While both make sounds, cicadas and grasshoppers are different types of insects with different body parts and life cycles

NGSS Connections

- Performance Expectation: 1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs
- Disciplinary Core Ideas: 1-LS1.A - All organisms have external parts that they use to perform daily functions
- Crosscutting Concepts: Structure and Function - The shape and stability of structures of natural objects are related to their function

Science Vocabulary

- * Cicada: An insect that lives underground for many years then comes out to live in trees
- * Wings: Body parts that help insects fly from place to place
- * Insect: A small animal with six legs and three body parts
- * Emerge: To come out from a hiding place
- * Molt: When an animal sheds its old skin to grow bigger

External Resources

Children's Books:

- Cicadas! Strange and Wonderful by Laurence Pringle
- Thirteen-Year Cicada by Rebecca Hirsch
- Waiting for Wings by Lois Ehlert

YouTube Videos:

- "Cicada Life Cycle for Kids" - Simple animation showing the stages of cicada development with kid-friendly narration: <https://www.youtube.com/watch?v=R0ys8Tl8p8Q>
- "What Do Cicadas Sound Like?" - Collection of actual cicada calls from different species with visual identification: <https://www.youtube.com/watch?v=mah26og11ms>