

## Photo Description



A large cicada sits on a tree branch with red leaves. The cicada has big clear wings with dark lines and a brown body. You can see its big round eyes on its head.

## Scientific Phenomena

This image shows the Anchoring Phenomenon of cicada emergence and life cycle completion. The cicada has recently emerged from its underground nymph stage after living in the soil for several years. It has undergone metamorphosis, shedding its old skin to reveal its adult form with fully developed wings. The cicada is now in its brief adult stage where it will mate, lay eggs, and complete its life cycle before dying within a few weeks.

## Core Science Concepts

1. Life Cycles: Cicadas go through incomplete metamorphosis with three stages - egg, nymph, and adult
2. Animal Structures: Cicadas have specialized body parts including large wings for flying, compound eyes for seeing, and strong legs for gripping
3. Seasonal Changes: Many animals change their behavior and appearance as seasons change
4. Habitat Needs: Animals need specific places to live that provide food, water, shelter, and space

### Pedagogical Tip:

Use real cicada shells (exoskeletons) if available in your area, as students can safely handle these and observe the eye holes, leg attachments, and body segments up close.

### UDL Suggestions:

Provide multiple ways for students to explore cicada life cycles through hands-on manipulatives, digital simulations, and movement activities where students act out each life stage.

## Zoom In / Zoom Out

1. Zoom In: Inside the cicada's body, special muscles attached to hollow chambers vibrate rapidly to create the loud buzzing sounds male cicadas make to attract mates.
2. Zoom Out: Cicadas are part of a larger forest ecosystem where they serve as food for birds, spiders, and other predators, while their underground nymphs help aerate soil and their adult emergence provides nutrients to the forest floor.

### Discussion Questions

1. What body parts help this cicada survive in its environment? (Bloom's: Analyze | DOK: 2)
2. How might a cicada's life be different in summer compared to winter? (Bloom's: Apply | DOK: 2)
3. What do you think would happen if there were no cicadas in the forest? (Bloom's: Evaluate | DOK: 3)
4. What patterns do you notice about the cicada's body parts? (Bloom's: Remember | DOK: 1)

### Potential Student Misconceptions

1. Misconception: Cicadas are harmful or dangerous to humans  
Reality: Cicadas are completely harmless - they don't bite, sting, or damage plants
2. Misconception: The loud buzzing sound comes from their wings flapping  
Reality: Male cicadas make sounds using special vibrating body parts called tymbals, not their wings
3. Misconception: Cicadas are the same as locusts  
Reality: Cicadas and locusts are completely different insects with different life cycles and behaviors

### Cross-Curricular Ideas

1. Mathematics - Counting & Patterns: Students can count the legs, wings, and body segments of cicadas. They can create patterns using cicada body part cutouts (6 legs, 2 wings, 1 body) and practice skip counting by 6s for legs across multiple cicadas.
2. ELA - Descriptive Writing: Students write "I am a cicada" acrostic poems or simple fact sentences about what cicadas look like and do. They can use descriptive words like "bumpy," "clear," "loud," and "shiny" to describe the cicada's features from the photo.
3. Art - Nature Collage & Observation Drawing: Students create cicada art using tissue paper for wings, brown paper for bodies, and real leaves similar to those in the photo. They can also practice observational drawing by sketching the cicada's body parts and coloring them with warm colors (browns, oranges, yellows).
4. Social Studies - Animal Habitats Around Us: Students investigate which insects live in their local community during different seasons. They create a classroom chart showing "Insects We See in Spring/Summer/Fall/Winter" and discuss why cicadas appear during specific times of year in their area.

### STEM Career Connection

1. Entomologist (Insect Scientist): An entomologist is a scientist who studies insects like cicadas. They learn about how insects live, grow, and change. They observe insects in nature, take pictures and notes, and share what they discover with other people. Average Salary: \$65,000 per year
2. Nature Photographer: A nature photographer takes beautiful pictures of animals and plants in the wild, like the photo of this cicada. They use special cameras and patience to capture amazing moments of insects and creatures in their habitats. Their photos help people learn about and care for nature. Average Salary: \$58,000 per year
3. Forest Ecologist: A forest ecologist studies how all the living things in a forest work together, including cicadas, trees, birds, and soil. They help protect forests and understand how animals like cicadas are important to keeping forests healthy. Average Salary: \$68,000 per year

### NGSS Connections

- Performance Expectation: 2-LS4-1 - Make observations of plants and animals to compare the diversity of life in different habitats
- Disciplinary Core Ideas: 2-LS4.A - 1-LS1.A
- Crosscutting Concepts: Patterns - Structure and Function

### Science Vocabulary

- \* Cicada: An insect that lives underground as a baby and comes out with wings as an adult
- \* Life cycle: The different stages an animal goes through as it grows and changes
- \* Metamorphosis: When an animal changes form as it grows from baby to adult
- \* Nymph: The young form of some insects before they become adults
- \* Habitat: The place where an animal lives and finds everything it needs to survive

### External Resources

Children's Books:

- Cicadas! Strange and Wonderful by Laurence Pringle
- Waiting for Wings by Lois Ehlert
- The Very Quiet Cricket by Eric Carle