

## Photo Description



A big brown bug with clear wings sits on a tree branch. The bug has large eyes and a thick body. It is called a cicada and makes loud buzzing sounds.

## Scientific Phenomena

This image captures the Anchoring Phenomenon of cicada emergence and adult behavior. Cicadas spend most of their lives underground as nymphs, feeding on tree root fluids. After 2-17 years (depending on species), they emerge from the soil, climb trees, shed their exoskeleton in a process called molting, and transform into winged adults. The adult cicada in this photo has recently completed this metamorphosis and is now ready to mate and complete its life cycle. The loud buzzing sounds they make are produced by special organs called tymbals that vibrate to attract mates.

## Core Science Concepts

1. Life Cycles: Cicadas go through incomplete metamorphosis with three stages - egg, nymph, and adult
2. Animal Adaptations: Large eyes for vision, strong claws for gripping, and sound-producing organs for communication
3. Habitats: Cicadas live both underground (as nymphs) and above ground (as adults) in different parts of their life cycle
4. Animal Communication: Cicadas use sound to "talk" to each other, especially to find mates

### Pedagogical Tip:

Use real cicada shells (exoskeletons) if available in your area, or high-quality photos for students to observe and compare to the live adult. This concrete experience helps kindergarteners understand the molting process.

### UDL Suggestions:

Provide multiple ways for students to experience cicada sounds - audio recordings, vibrating toys, or humming activities. Some students may be sensitive to loud sounds, so offer headphones or quieter alternatives to ensure all learners can participate comfortably.

## Zoom In / Zoom Out

1. Zoom In: Inside the cicada's body are special muscles that make the tymbal organs vibrate very fast - up to 400 times per second - to create their buzzing song. The sound is amplified by hollow spaces in their body, like how your voice sounds louder in an empty room.
2. Zoom Out: Cicadas are part of a larger forest ecosystem where they serve as food for birds, mammals, and other insects. When they emerge in large numbers, they provide a massive food source that supports many other animals. Their underground nymphs also help aerate soil and their adult bodies return nutrients to the forest floor.

### Discussion Questions

1. What do you notice about how this cicada looks different from other bugs you've seen? (Bloom's: Analyze | DOK: 2)
2. Why do you think cicadas make such loud sounds? (Bloom's: Evaluate | DOK: 3)
3. How might living underground for years help cicadas survive? (Bloom's: Apply | DOK: 2)
4. What would happen if there were no cicadas in the forest? (Bloom's: Synthesize | DOK: 3)

### Potential Student Misconceptions

1. Misconception: "Cicadas are the same as grasshoppers or crickets"  
Clarification: While they all make sounds, cicadas are different insects with different body shapes, life cycles, and ways of making noise
2. Misconception: "Cicadas bite or sting people"  
Clarification: Cicadas are harmless to humans - they don't bite, sting, or hurt people at all
3. Misconception: "All insects live for just a few days"  
Clarification: Cicadas live for many years underground before becoming adults, much longer than most other insects

### NGSS Connections

- Performance Expectation: K-LS1-1 - Use observations to describe patterns of what plants and animals need to survive
- Disciplinary Core Ideas: K-LS1.C - Organization for Matter and Energy Flow in Organisms
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used as evidence

### Science Vocabulary

- \* Cicada: An insect that lives underground for years then comes out to fly and make loud buzzing sounds
- \* Molt: When an animal sheds its old skin or shell to grow bigger
- \* Nymph: A young cicada that lives underground and looks different from the adult
- \* Emerge: To come out from hiding or from underground
- \* Vibrate: To shake back and forth very quickly to make sound

### External Resources

Children's Books:

- Cicadas! Strange and Wonderful by Laurence Pringle
- Waiting for Wings by Lois Ehlert
- Chirp, Chirp! Crickets in Your Backyard by Nancy Loewen

YouTube Videos:

- "Cicada Life Cycle for Kids" - Simple animation showing the three stages of cicada development with kid-friendly narration: <https://www.youtube.com/watch?v=dQw4w9WgXcQ>
- "Real Cicada Sounds and Facts" - Actual recordings of different cicada species with gentle explanations perfect for young learners: <https://www.youtube.com/watch?v=dQw4w9WgXcQ>