Cicada

Life Science | Lesson Guide

1st Grade

Photo Description

A big brown bug with clear wings sits on a tree branch. The bug has large eyes and a thick body. Its wings have lines that look like a pattern.

Scientific Phenomena

This image shows a cicada emergence phenomenon - when adult cicadas come out from underground after living there for years. The cicada has just finished changing from its young form (nymph) into its adult form through a process called metamorphosis. This happens when soil temperature reaches the right warmth, triggering thousands of cicadas to emerge at the same time to find mates and lay eggs.

Core Science Concepts

1. Life Cycles: Cicadas go through incomplete metamorphosis with three stages - egg, nymph, and adult
2. Animal Structures: The cicada's large eyes help it see, strong legs help it climb, and wings help it fly to find food and mates
3. Seasonal Changes: Cicadas emerge when the weather gets warm enough, showing how animals respond to environmental changes
4. Animal Behaviors: Cicadas make loud sounds to communicate with other cicadas

Pedagogical Tip:

Use hand motions to act out the cicada life cycle - start crouched down as an egg, crawl as a nymph underground, then "emerge" and spread arms like wings as an adult. This kinesthetic approach helps first graders remember the sequence.

UDL Suggestions:

Provide multiple ways for students to show their learning about cicadas - drawing the life cycle, acting it out, building with blocks, or using picture cards to sequence events. This supports different learning preferences and abilities.

Zoom In / Zoom Out

1. Zoom In: Inside the cicada's body are special muscles that vibrate very fast to make the loud buzzing sounds we hear - like a tiny drum beating hundreds of times per second
2. Zoom Out: Cicadas are part of the forest food web, providing food for birds, spiders, and other animals when they emerge, which helps keep nature in balance

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 have such big eyes? (Bloom's: Evaluate | DOK: 3)
3. How might baby cicadas be different from this adult cicada? (Bloom's: Apply | DOK: 2)
4. What would happen if all the cicadas came out at different times instead of together? (Bloom's: Synthesize | DOK: 3)

Potential Student Misconceptions

1. Misconception: "Cicadas are scary and will hurt me"
   Reality: Cicadas are gentle insects that don't bite or sting people - they only eat tree sap
2. Misconception: "All bugs look the same when they grow up"
   Reality: Young cicadas (nymphs) look very different from adult cicadas and live underground
3. Misconception: "Cicadas come out every summer"
   Reality: Most cicadas only emerge every few years, spending most of their lives underground

NGSS Connections

- Performance Expectation: 1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive
- Disciplinary Core Ideas: 1-LS1.B Adult plants and animals can have young
- Crosscutting Concepts: Patterns - Patterns in nature can be observed and used to make predictions

Science Vocabulary

* Cicada: A large insect that lives underground as a baby and comes out to fly and make loud sounds
* Emerge: To come out from a hidden place
* Nymph: The young form of some insects before they become adults
* Life cycle: The different stages an animal goes through as it grows and changes
* Metamorphosis: When an animal changes from one form to another as it grows up

External Resources

Children's Books:
- Cicadas! Strange and Wonderful by Laurence Pringle
- Waiting for Wings by Lois Ehlert
- The Very Hungry Caterpillar by Eric Carle (for life cycle connections)

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=example1
- "Why Do Cicadas Make That Sound?" - Short educational video explaining cicada sounds with real footage and clear explanations for young learners: https://www.youtube.com/watch?v=example2