Katydid Camouflage

Life Science | Lesson Guide

1st Grade

Photo Description

This image shows a katydid—an insect that looks like a large green grasshopper—sitting on grass and plant stems. The katydid's body is bright green, just like the leaves and grass around it, making it very hard to spot. You can see its long antennae, wings folded on its back, and strong back legs designed for jumping.

Scientific Phenomena

Anchoring Phenomenon: Why is this insect so hard to see in the grass?

This image demonstrates camouflage (also called protective coloration), a survival strategy where animals have colors, patterns, and shapes that match their environment. The katydid's green body blends in with green plants because natural selection has favored individuals whose coloring helps them hide from predators. Over many generations, katydids with greener bodies survived longer and had more babies, passing along genes for green coloring. This is an observable example of how animals adapt to their habitats to stay safe.

Core Science Concepts

* Camouflage is an adaptation: Animals have body colors and shapes that help them survive in their environment. The katydid's green color helps it hide from predators like birds.

* Colors help animals survive: Animals that blend in with their surroundings are harder for predators to find and eat. This keeps them alive longer.

* Animals live in habitats: Habitats are homes where animals find food, water, and shelter. The katydid lives in grassy, leafy areas where green coloring helps it hide.

* Animals have different body parts for different jobs: Katydids have long antennae for sensing their environment, wings for flying, and strong back legs for jumping away from danger.

Pedagogical Tip:

For First Grade, focus on the observable trait: "The katydid is green like the grass!" rather than complex genetic explanations. Use the phrase "camouflage" repeatedly so students build academic vocabulary. Point out specific details (body color, leaf shape similarity) with your finger on the image to guide student attention.

UDL Suggestions:

To support diverse learners, provide a printed image of the katydid on grass so students who struggle with screen viewing can examine it closely. Offer tactile comparisons by letting students hold green fabric samples next to real grass. For English learners, create a visual word wall with picture cards for: katydid, camouflage, green, grass, hide, predator. Allow students to respond to questions through drawing, verbal language, or gesture rather than writing.

Zoom In / Zoom Out

Zoom In: Cellular Level
Inside the katydid's skin are tiny structures called cells that contain a special green substance called chlorophyll (the same stuff that makes plants green!). Wait—katydids don't actually make their own chlorophyll like plants do. Instead, the katydid's cells produce a green pigment (a natural color chemical) that their body makes all on its own. This pigment is made from tiny parts called molecules. When light hits these molecules in the katydid's skin, it bounces back the green color we see, and absorbs other colors. This happens so fast we don't notice it—we just see a green bug!

Zoom Out: Ecosystem Connection
The katydid lives in a grass and plant community that is part of a larger ecosystem—a neighborhood where plants, animals, soil, water, and sunlight all work together. The katydid eats plants (it's an herbivore), and birds and spiders eat katydids (making katydids prey). The katydid's green camouflage helps balance this ecosystem: it helps katydids survive long enough to make babies, which means there are katydids for predators to eat, which keeps bird and spider populations healthy. If all katydids were easy to see and got eaten too quickly, there wouldn't be enough food for birds, and the whole system would fall apart. The katydid's camouflage is one tiny but important part of keeping nature in balance.

Discussion Questions

1. Why is it hard to see the katydid in this picture? (Bloom's: Understand | DOK: 1)

2. What would happen to a red katydid sitting in green grass? Who might see it? (Bloom's: Analyze | DOK: 2)

3. Can you find three things in the picture that are the same color as the katydid? Why do you think that helps the katydid? (Bloom's: Analyze | DOK: 2)

4. What other animals do you think might use camouflage to hide from animals that want to eat them? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

Misconception 1: "The katydid turned green to hide, like it decided to change color on purpose."
- Clarification: The katydid was born green because its parents were green. It didn't change color to hide—it was already green! Long, long ago, katydids that happened to be born green were better at hiding, so they stayed alive longer and had babies. Those babies were also green. After many, many generations, almost all katydids became green. The katydid didn't choose to be green; nature chose which katydids survived.

Misconception 2: "Camouflage means the katydid is invisible or disappears."
- Clarification: Camouflage doesn't make the katydid disappear—it just makes it very hard to see. If you know exactly where to look, you can still see it! A bird or snake has to look very carefully to find a camouflaged katydid. Some katydids still get eaten, but camouflage gives them a better chance of staying alive.

Misconception 3: "All green animals use camouflage."
- Clarification: Some animals are green for other reasons, not just to hide. Some plants are green because they need that color to make food from sunlight. A green frog might use camouflage to hide, but a green tree frog might be green and very easy to see because it lives on bright green leaves and doesn't need to hide. Not every green color is camouflage—it depends on where the animal lives.

Extension Activities

1. Camouflage Hide-and-Seek Game: Place small green paper cutouts of katydids on a green poster board with various green objects (leaves, grass clippings, green construction paper). Challenge students to find the hidden katydids. Discuss why some were easier or harder to find. Then repeat with a red katydid on the same background to show how poor camouflage makes an animal visible to predators.

2. Create Your Own Camouflaged Animal: Provide students with magazines, colored paper, and a "habitat" background (green grass field, blue ocean, brown forest floor, etc.). Students cut out or draw an animal and color or decorate it to match their chosen habitat. Display creations and have classmates try to spot each camouflaged animal.

3. Nature Hunt Observation: Take students on a short outdoor walk to search for animals that are hard to see because of their coloring. Look for insects on plants, birds in trees, or spiders on branches. Photograph or sketch findings and discuss how each animal's color helps it hide. Create a class book titled "Animals That Hide."

Cross-Curricular Ideas

Math: Counting and Comparing Hidden Objects
Create a "Find the Katydid" chart where students search the katydid photo (or a printed version) and mark or count how many grass blades, leaves, or plant stems they can see. Then ask: "How many green things are there? Is it easy to count when the katydid hides?" This builds observation and counting skills while reinforcing why camouflage works—there are so many green things that the katydid blends in with all of them. Students can create a bar graph showing "Things I Found: Grass, Leaves, Katydids" to compare quantities.

ELA / Language Arts: "Where's the Katydid?" Descriptive Writing
Read aloud a simple picture book like Hide and Seek: Animals in Camouflage, then have students dictate or write (with support) a sentence describing what they see: "The katydid is green. The grass is green. The katydid hides." Create a class poem with repeated lines: "Green, green, green / Can you see the katydid? / It hides, hides, hides / In the grass so green." Display the katydid photo and have students point to words on a word wall (green, hide, grass, leaf, safe) as you read together.

Art: Camouflage Collage and Habitat Matching
Provide students with colored paper (green, brown, blue, orange) and ask them to tear or cut out small shapes to create a "habitat" (a green field, brown forest, blue ocean, etc.). Then give students pre-cut animal shapes (or let them draw simple animals) and challenge them to color and arrange the animals to match their habitat for camouflage. Younger students can use stickers or cut-outs to place animals. Display finished collages and discuss: "Can you find the hidden animal? Why is it hard to see?" This builds fine motor skills and reinforces the camouflage concept through hands-on creativity.

Social Studies: Animal Homes Around the World
Explore different habitats where camouflaged animals live (rainforests, deserts, snowy mountains, oceans). Show pictures of animals from each habitat—a green katydid in grass, a brown deer in a forest, a white Arctic fox in snow, a tan desert lizard on sand. Discuss: "Why do animals in different places have different colors?" Create a simple world map or habitat poster where students place animal pictures in matching environments. This builds geography awareness and shows that camouflage works differently in different places around the world.

STEM Career Connection

Wildlife Biologist / Naturalist
Wildlife biologists study animals like katydids in their natural habitats. They go outdoors, observe insects, plants, and other creatures, take notes and photos, and learn how animals survive. Some wildlife biologists work to protect endangered animals or keep habitats healthy. If you love bugs, plants, and being outside, this could be your job! Average Annual Salary: $63,000–$75,000

Entomologist (Insect Scientist)
An entomologist is a scientist who studies insects—including katydids, beetles, butterflies, and ants. Entomologists might work in a lab, a museum, a university, or outdoors in nature. They ask questions like "Why are some insects green?" and "How do insects help plants grow?" Some entomologists help farmers protect crops by studying pest insects. Average Annual Salary: $60,000–$80,000

Camouflage Designer / Clothing and Military Designer
Did you know that people study animal camouflage to design better clothing and uniforms? Designers and engineers use what they learn from animals like the green katydid to create camouflage patterns for hunters, soldiers, and outdoor gear. They study how colors blend into backgrounds and create patterns that help people hide in nature or in cities. It's like being a spy—using nature's secrets! Average Annual Salary: $55,000–$85,000

NGSS Connections

Performance Expectation:
1-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

Disciplinary Core Ideas:
- 1-LS1.A: All organisms have external parts (like color and shape) that help them survive.
- 1-LS4.B: Animals have different body parts that help them survive in their habitats.

Crosscutting Concepts:
- Patterns: The pattern of green color in the katydid matches the pattern of green in grass and leaves.
- Structure and Function: The katydid's green color (structure) helps it hide and survive (function).

Science Vocabulary

* Camouflage: When an animal's colors or patterns help it hide in its environment so predators cannot easily see it.

* Katydid: A large green insect with long antennae and wings that looks similar to a grasshopper.

* Adaptation: A body part or behavior that helps an animal survive and stay safe in its habitat.

* Predator: An animal that hunts and eats other animals for food.

* Habitat: The place where an animal lives and finds food, water, and shelter.

* Antennae: Long, thin body parts on an insect's head used to sense and feel the environment.

External Resources

Children's Books:

The Mixed-Up Chameleon* by Eric Carle — A story about color-changing animals and adaptation (though chameleons change color differently than camouflage, it introduces the concept of color and survival).

Hide and Seek: Animals in Camouflage* by John Woodward — A factual, beautifully illustrated book showing 12 animals with camouflage.

Who Is the Beast?* by Keith Baker — An engaging story exploring how animals use camouflage and color to blend in.

Teacher Notes: This katydid image is an excellent anchor for introducing First Graders to animal adaptations and survival. The phenomenon is immediately visible and relatable—students can understand why hiding helps an animal stay safe. Use real or high-quality photos whenever possible, and encourage students to find camouflaged creatures in their own outdoor environments to deepen engagement and observation skills.